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OIL WORLD
and Petroleum Industry

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JULY 20, 1937

Vol. 30
No. 14

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No. 1493

NATIVE SON MAKES GOOD!

BAKER ROTARY WALL SCRAPER

. . . AND HERE ARE THE REASONS FOR HIS OUTSTANDING SUCCESS AND POPULARITY IN CALIFORNIA

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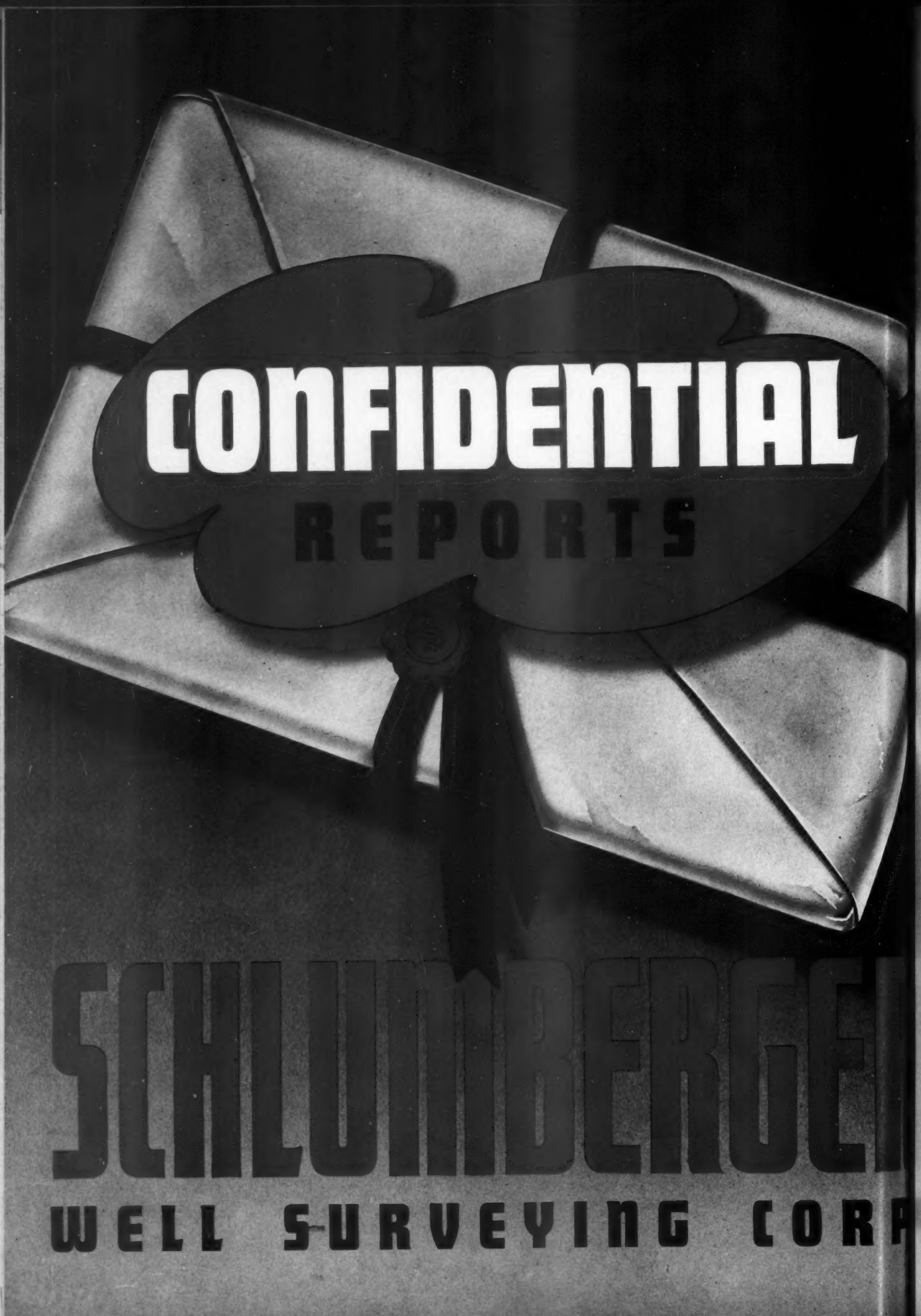
BAKER ROTARY WALL SCRAPER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CALIFORNIA
OIL WORLD
and Petroleum Industry

THE WORLD'S OLDEST OIL TRADE PUBLICATION

JULY 20, 1937
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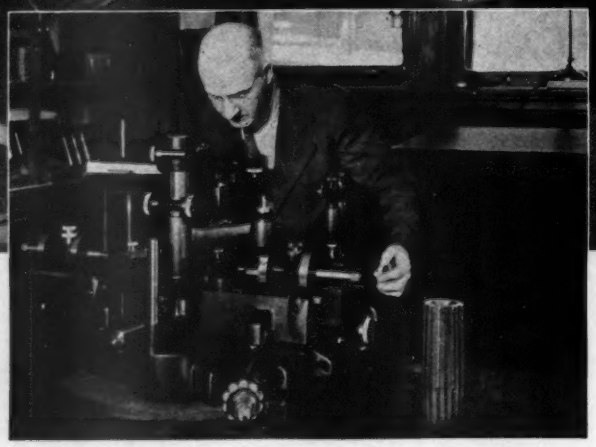

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YOUNGSTOWN

CALIFORNIA
OIL WORLD
and Petroleum Industry

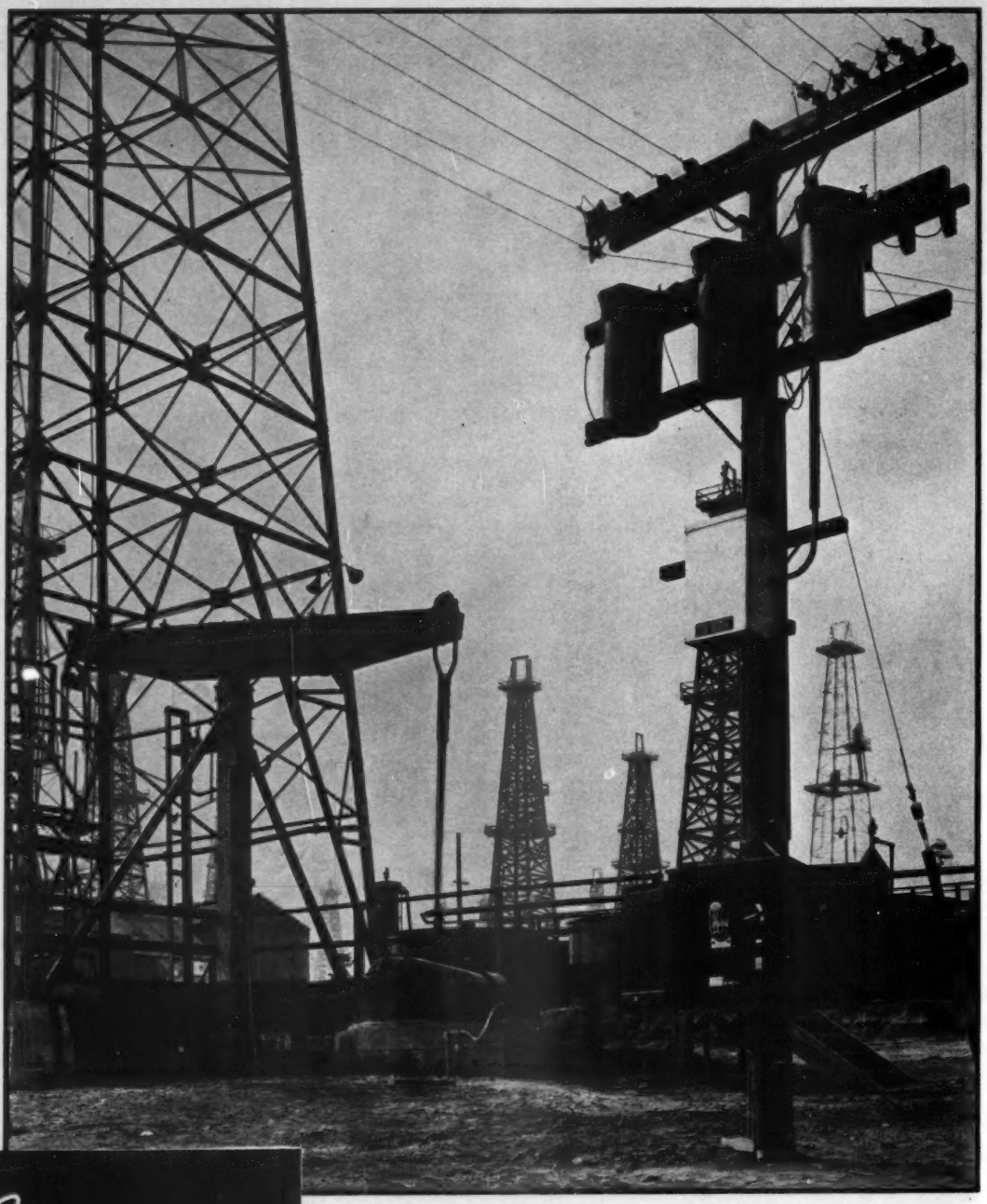
When Demand Declines—What?

Production in California is running on the ragged edge of destruction, even though it is not so excessive that oil is going into storage. Present production is just about even with consumption, which condition would cause no worry if the winter season of slack demand were not approaching.

With the arrival of Labor Day, which will be September 6, the high demand for gasoline and oil products will stop almost as if it had been cut off with a knife. It always happens—schools are in session, vacations are over, and the motoring public simply ceases to motor. In addition, this year marks the first time in the recent few years when the curve of consumptive demand is beginning to slack off. Demand is higher, admittedly, but it is not increasing as fast as earlier prognostications indicated that it would. It appears, therefore, that California is approaching a condition of oil saturation, insofar as the demand side of the picture is concerned, and it behooves the producers of the state to take this condition into consideration that they may avoid sure penalties in the fall and winter.

In all discussions of production, Wilmington has been blamed for the statistical surplus, and has further been blamed for the fact that there is any shakiness in the market. However, Wilmington is at present facing the most effective curtailment to market demand of any field in the state. The curtailment at Wilmington is economic—because there are no buyers for more than 50,000 bbls. of Wilmington oil per day, Wilmington does not produce more than 50,000 bbls. per day. This kind of curtailment is effective, if other kinds are not, and this is the kind of curtailment that Wilmington probably will continue to face, agitation for pipelines, posted prices, and a stabilized market to the contrary notwithstanding.

Wilmington is not a worry, now, but the production picture of the rest of the state is, just because the industry cannot continue to absorb 665,000 bbls. per day, the average of the past two weeks, under the conditions of lower demand bound to ensue this winter.



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* * *

ABOVE: Pumping unit on Signal Hill. Westinghouse reduction gear unit V-belt drive. 25 H.P., 440 V., 3-phase G. E. Motor. Showing transformer bank and control panel. PDO-2 meter and 2300 V. disconnecting equipment for 100 H.P. mobile pulling outfit.

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

The General Petroleum Corporation

Chapter II — Growing Pains, 1912 - 1916

By Eugene I. Harrington

Captain John Barneson had always felt that the natural tie between oil and transportation was close and strong. In 1898, upon resigning his command of the U. S. S. **Arizona,** he had determined to prove that oil was the most efficient and economical fuel for steamship transportation. He had seen oil supplant coal as the principal railroad fuel and he could see no reason why oil shouldn't be a better fuel for ships as well as for locomotives. In the face of wide-spread derision the Captain had backed his opinion with his fortune. He converted the coal-burning steamship **Enterprise** to oil and in her first run from San Francisco to Honolulu and return she had proved beyond question that the Captain was right.

When Barneson turned from the sea to give his full attention to oil, he concentrated again on transportation —this time in bringing oil from the San Joaquin fields to tidewater. Against the advice of experienced oil men he undertook the construction of the Coalinga-Monterey pipe line, largest in the world. Here, too, he was successful and once more the oil industry was forced to doff its hat to his courage and ability.

It must have given Barneson great satisfaction to learn, a dozen years after his experience with the **Enterprise,** that the United States government at last was to let bids for oil-burning battleships. In 1912, the petroleum era in the navies of the United States and other world powers was ushered in when the Secretary of the Navy announced that the government's two new super-dreadnaughts, the "Nevada" and the "Oklahoma", would be designed to burn oil exclusively. This was final confirmation to John Barneson's early vision and now, at last, his General Petroleum Company and the other major oil companies of California stood to profit from his daring experiments of twelve years before.

General Petroleum's Holdings

When, in the spring of 1912, the General Petroleum Company was formed to take over the properties of the Esperanza Consolidated, it had reason to be proud of its California oil lands. The company owned 11,000 acres of prospective and proven acreage in the California fields. Its properties were geographically scattered; there were 1100 acres in Midway, 2120 in Elk Hills and Buena Vista, 335 in Sunset, 979 at Lost Hills, 480 in the Belridge district, 2200 at Santa Maria, 1728 in Carissa, 170 in Coalinga, 960 in the Kettleman Hills and 950 in the Fullerton district. The company's 65 active wells were producing more than 6000 barrels of crude a day. With these lands under the General banner, the young company held its head high among the big petroleum producers of the West.

> The second chapter of the story of General Petroleum Corporation, telling of the company's life and death struggle for financing during the period of its greatest expansion, is presented herewith by the California Oil World, with the cooperation of Mitchum, Tully & Co., California investment dealers.

Barneson, with characteristic foresight, had also acquired leases on 18,500 acres in the promising Tampico field of Mexico. As always, one eye was cocked at transportation, and the company leased 50 acres of Tampico waterfront property. The oil leases were written for an average length of 35 years and the company was to pay a 10 per cent royalty to the Mexican government if and when oil was discovered.

The General Petroleum Company, capitalized for $50,000,000 and authorized to issue another $25,000,000 in first-mortgage six per cent gold bonds, was not satisfied, however, to confine its activities to production. It was destined for bigger things; already important plans for expansion were afoot. Barneson and the company he directed were about to tackle another "impossible" task, the construction of a pipe line from the Midway field to San Pedro over the 4200-foot El Tejon Pass.

To undertake this engineering marvel that was to pierce the Tehachapi mountains and that, on completion, was to be recognized as one of the modern wonders of the oil industry, General Petroleum formed the General Pipe Line Company. This company was capitalized at $7,500,000 and was 75 per cent owned by the General Petroleum Company.

More Jeers

Once again oil men jeered at John Barneson. They said that even to imagine construction of a pipe line over that wild and mountainous country was absurd. Knowing Captain Barneson and his tenacity and remembering that twice before he had performed the "impossible" these skeptics left themselves a loop-hole. They said that perhaps Barneson's engineers might some day build the line; but most positively they stated that oil would never flow through those pipes. Oil, they

The Lost Hills-Belridge district was a heavy contributor to the General Petroleum Company's crude oil production total in the second decade of the century. A view of the company's Lost Hills tanks and derricks, as they looked in 1913, is shown here.

said, was too heavy to be pumped up those steep grades. Laughingly they called the Midway-San Pedro pipe line project "Barneson's Folly."

Many of those who doubted Barneson's judgment were seasoned oil men. Their opinions were valuable but Barneson and his associates in General Petroleum knew that if their company was to compete on an equal footing with the other major companies it must have facilities for transportation. They knew, too, that only a bold stroke would place them alongside the older leaders in the industry. These men had courage—which was fortunate; they had need for every atom of it before they were through with that pipe line. It was to force the company to the verge of bankruptcy; and it, together with the courage and ability of Captain Barneson, was to yank them back again from that dangerous brink. In a way the oil experts were right. The Tehachapi pipe line **was** a hazardous and expensive undertaking and it is easy to see how it might have sunk lesser men than those who conceived, planned and completed it.

Tenacity had long been one of John Barneson's chief characteristics; into his whole organization he instilled stick-to-itiveness that is still apparent today. Barneson and the men who worked with him believed in that pipe line; they pushed it foot by foot and mile by mile, in a gruelling fight against gradients, distance, deserts and mountains. Before General men always was their company's announcement — that within a year their pipe line would stretch 155 miles from the floor of the San Joaquin Valley, over the almost insurmountable Tejon Pass, and through Los Angeles to the extreme tip of the San Pedro Breakwater, a mile out to sea. In addition to this enormous task, the company had under construction at the same time a 28-mile, 6-inch pipe line from Lost Hills to Midway and a 52-mile branch line from Lebec to Mojave, which was to carry oil to the company's most important single customer, the Santa Fe Railroad.

Refinery Plans

While the ambitious plans for the pipe lines were being carried to completion, other orders were going out from General headquarters in San Francisco's Alaska Commercial Building. Ten acres of land were purchased at Vernon, just outside Los Angeles, as the site for the General Petroleum's first refinery, and company draughtsmen were bent over tables crowded with plans for this new undertaking. Engineers were clicking slide rules and working out formulas for another more remote refinery soon to be built in the desert town of Mojave. At Los Angeles Harbor the General Pipe Line Company planned to spend $1,000,000 for the construction of one of the largest fuel stations ever installed in any harbor. Meantime the production department was acquiring additional proven oil lands. Three hundred and twenty acres were purchased in the McKittrick field at $750 an acre; through the purchase of 1800 acres the company strengthened its position in the Belridge field; new acreage at Fullerton was purchased. In July the young company exchanged $750,000 worth of its stocks and bonds for the valuable Midway properties of the Bear Creek Oil Company.

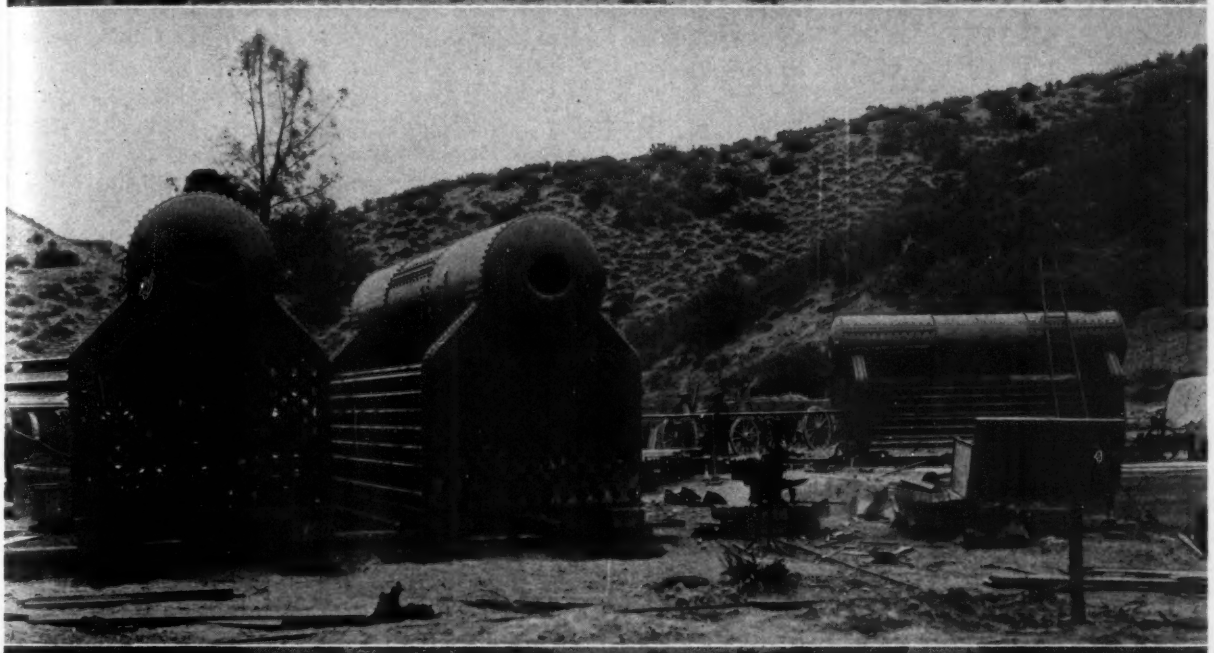
By October, 1912, the General Petroleum Company was well started on its uphill climb to leadership. Its diverse activities were already attracting the attention of the major companies. Less than a year after its incorporation, Barneson's aggressive company was making a place for itself on the oil map of California.

The Company's Position

A review of the company's position as it stood before the close of that first momentous year shows that it held more than 14,000 acres of proven and prospective lands in California and 27,000 acres of land in Mexico. General Petroleum Company had increased its production from 6000 to 7000 barrels a day and added 25 producing wells. Over a third of its main pipe line was completed and it was being pushed south at the rate of 1-1/3 miles a day. All of the eleven pumping stations that were continuously to force 30,000 barrels of oil a day through the eight-inch pipe were under construction. Ground had been broken for both of the company's refineries, storage tanks had been erected along the pipe line's route and the huge San Pedro tank farm was nearing completion. This was phenomenal expansion and the General Petroleum Company was soon to undergo the pangs and ordeals that often come with sudden growth.

But before Barneson and the company were to experience those growing pains the company went through

On the facing page are three scenes from the construction of the General Petroleum's Midway-San Pedro pipeline. At the top is shown the only road for the company's mule teams in the hauling of equipment to the Liebre pumping station—the Los Alamos Creek bottom. The boilers in the center picture were hauled six miles from the railroad to Liebre. The oil heater, weighing several tons, was hauled up the steep grades of the Grapevine road by two 13-mule teams. The pictures give a good idea of the difficulties involved in the construction of the pipeline, difficulties solved and overcome by the company's engineers.



The Midway-San Pedro pipeline that rose from the dusty floor of the San Joaquin Valley, over the 4200-foot ridge of the Tehachapi mountains, came to an end at the tip of the old San Pedro breakwater, a mile out to sea. This is a view of the line's end, before the company built its marine terminal at Terminal Island.

a still greater period of expansion. In November, 1912, an oil reporter, recording the company's acquisition of the properties of the Continental Petroleum Company, wrote:

"The General Petroleum Company, for a reported consideration of $3,500,000 in stock and bonds and a large cash settlement, has purchased the entire holdings of the Continental. The properties are widely scattered, embracing four fields and aggregating 7670 acres of oil lands in California and Mexico, the latter by far the most valuable of the whole.

"Considering the development activities of the General Petroleum it is expected that it will soon increase operations on the properties. The deal was made in New York, those selling to the General being W. M. Graham, formerly managing-director of the California Oilfields, Ltd., Royal Dutch predecessor in America, and his associates.

"The General Petroleum is increasing its activities by leaps and bounds and is today one of the foremost companies in California. Its activity since its formation has been the marvel of the oil world and its resources seem limitless. The question, 'who is behind the General Petroleum besides Mr. Barneson?' is the all absorbing topic of the day. It cannot be answered; but whoever the backers may be, they manifest an extraordinary length of purse and a great confidence in themselves, Captain Barneson and the whole future of the oil industry in California and Mexico. The General Petroleum Company bids fair, at the present rate of expansion, to become not merely one of the leading oil corporations of California, but of the world."

That is how the oil industry in California viewed the General Petroleum Company before it had celebrated its first birthday. But the industry's curiosity to know the unseen angel behind the company was never to be realized, for John Barneson and the men who worked loyally with him stood practically alone. There was no mysterious backer, no deep-pocketed sponsor. The General Petroleum Company, as it turned the corner into 1913, was standing on its own two feet.

To be sure, world financiers had suddenly become interested in the affairs of General Petroleum. Notable among these was Andrew Weir, multi-millionaire English shipping magnate and former Barneson associate. He had long been interested in buying a strong California oil company and it was only natural that he should turn to his friend Barneson. Together they acquired an option on the $30,000,000 Union Oil Company and, to the amazement of the entire oil world, John Barneson, with dramatic suddenness, announced that his company had purchased the potent Union Oil Company of California. At first the announcement was greeted with great skepticism but when Barneson was elected to the Union directorate to replace J. S. Torrance, who resigned when the announcement was made, the California oil industry once again awoke to the realization that Captain John Barneson, after only a decade of experience in petroleum, had become a dominant figure in his chosen field.

The option was held in the name of the General Petroleum Company only and from that time until the Union-General deal was finally abandoned in 1915 Barneson and General remained almost continuously in the spotlight. For if such a deal had been finally consummated General would have become the most important single company in the entire oil industry of the West.

The Deal Falls Through

But this giant deal was not fated to go through. By the middle of 1913 it was becoming apparent that the General Petroleum Company was suffering from lack of working capital. During the early part of that year it had added new oil acreage; it now controlled more than 23,000 acres of land in California and its 160 wells were that year to produce nearly 4,000,000 barrels of oil. Its pipe lines had been completed at great expense and its 20,000-barrel Vernon refinery was already in operation. Its storage tanks held 750,000 barrels of crude but prices for oil were just then depressed. The company had contracts with other major companies and with the Santa Fe Railroad and while a future outlet for its production was assured, the immediate present was a matter of some concern. The company's prospects were splendid; it owned some of the most valuable oil acreage in the state; it controlled 12 per cent of the total production in California; it had virtually no sales problems, transportation problems or refining problems. Yet in the face of this optimistic outlook the shortage of capital continued to pinch more painfully. To the solution of this one remaining problem—the proper financing of the company he had built so dramatically, John Barneson now turned his entire attention.

Announcement came before the end of the year that Andrew Weir & Co. had agreed to form an English corporation to finance General Petroleum. For a time it appeared

that the company's problems were at an end but with the coming of war this deal, too, fell through. Barneson continued to seek advantageous financing, only to meet with one disappointment after another. War in Europe made matters doubly difficult, but Captain Barneson was a hard man to defeat. The courage with which he had met the buffets of other storms and the inborn confidence that he had in himself and his company were now put to the severest of tests.

Meanwhile, the financial position of the company was growing steadily more grave. In May, 1914, the company defaulted on its bonds and the bondholders, inclined to be patient and cooperative, formed a bondholders' committee to assist Captain Barneson in untangling the complex finances of the company. The company's general counsel, A. L. Weil, who is today president of the General Petroleum Corporation, announced that British interests were definitely out of the corporation's picture and that a new plan of reorganization was being drawn up which would shortly be presented to General Petroleum stock and bond holders. Rumors flew about General Petroleum: one, that the Biddles of Philadelphia were to assume control; another, that important Wall Street people were waiting like wolves to gobble the company when all other financing failed; finally, that the Santa Fe Railroad Co. was soon to come into control. These and other financial tales were ignored by Barneson and his associates. They continued to seek the kind of financing that would permanently solve the company's problems and that would at the same time give those who had helped to build the company a fair return on their investment.

Captain Barneson and A. L. Weil worked hand-in-hand with the bondholders' committee; they turned over the corporations' books to the committee's counsel and did everything in their power to aid in bringing about a satisfactory re-organization.

The General Petroleum Company's Vernon refinery started operations in June, 1913, on two crude units with a daily capacity of 20,000 barrels. The refinery and pipeline station occupied only 10 acres in the newly created industrial district of Vernon; today it covers approximately 175 acres and is a complete modern refining plant.

The committee was made up of some of the most important names on the West's financial roster and included such men as Frank B. Anderson, Chairman, John D. McKee, Joseph D. Grant, Percy Morgan, Mark Gerstle, Maxwell McNutt, Herbert Clayburgh, Richard Mulcahy and Charles Hayden. As these able financiers, together with Barneson and Weil, worked toward a sound solution of General's fiscal problems, the other activities of the company moved in a highly satisfactory manner.

The Plan Succeeds

By January 1, 1916, it began to appear that the plan the protective committee had submitted to the bondholders would prove agreeable to them and that the financial ordeal of the General Petroleum Company was nearing an end. The plan called for a complete reorganization of the company's financial structure and deposit of the company's bonds with the Mercantile Trust Company in San Francisco. The public demonstrated its confidence in Barneson, his associates and the future of the company by depositing their General securities with surprising rapidity.

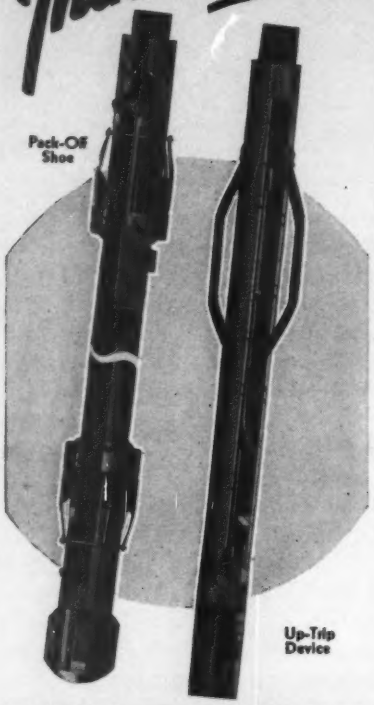
The record of the company's growth furnished ample supporting evidence for this confidence. When the Esperanza was organized as a producing company on March 30, 1910, it owned 390 acres of land and produced only 400 barrels of crude a day. A little less than six years later the General Petroleum Company was reorganized as one of the major oil companies of the west. It owned more than 23,000 acres of land in the various California fields. Its 225 wells had yielded nearly 4½ million barrels of oil in 1915. Since the completion of its main pipe line in May, 1913, over 14 million barrels of oil had flowed through it from Midway to San Pedro. The company owned steel tankage of 3,380,000-barrel capacity and its two modern refineries had a daily refining capacity of 30,000 barrels. Three oil tankers of the most improved type were sailing the ocean under the General flag and the company sold its oil and refined products from Chile to Alaska and from the Rocky Mountains west to the Hawaiian Islands. Altogether the company had spent upwards of $11,000,000 for its pipe line and field equipment and property development and, despite financial depressions and the obstacles that any new company meets on its climb upward, General Petroleum had shown remarkable progress and substantial growth.

In June, 1916, Frank B. Anderson, bondholders' committee chairman, announced that the reorganization plan had been almost unanimously accepted by security holders. That month the General Petroleum corporation was formed to take over the assets of the old General Petroleum Company. These assets were sold at public auction to the new organization for $2,000,000, Anderson being the only bidder.

John Barneson had ridden out another storm, by far the worst one of his career. Now he was to go on to take his company to new heights and to prove in a hundred different ways that the confidence the bondholders had shown in him and in their company was well justified.

The next chapter of the story of the development of the General Petroleum Corp. will appear in the next issue of the California Oil World.

Introducing



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O'Donnell Bill Apparently To Supersede Olson Bill

If referendum not invoked, O'Donnell bill to be in effect on Aug. 27. Preliminary work on Olson bill already underway.

With the State Director of Finance having taken the preliminary steps looking to the awarding of leases to bidders under the Olson tideland leasing law, Governor Merriam's signing of the O'Donnell bill gives every indication that the work thus far done will be useless. The terms of the Olson bill make it practically a physical impossibility for the Director of Finance to award leases to bidders before Aug. 27, at which date the O'Donnell bill will become law and, in competent legal opinion, will supersede the Olson bill.

The Director of Finance has advertised for applicants for bidding to fill out the questionnaire required under the Olson bill, after which he will notify the successful applicants, and, were it not for the O'Donnell bill, would then call for bids from the successful applicants and award leases on the basis of the bids. The O'Donnell bill, however, changes the complexion of matters, and, unless it is held up by referendum, will be law before this course can be carried out. While there has been some talk of seeking a referendum on the O'Donnell bill, in general this talk has emanated from sources close to Senator Olson, and thus far has been talk only, no move to circulate a petition having been undertaken. If, however, sufficient signatures to a petition are secured, the O'Donnell bill would in all probability be held up until the general election in November, 1938, by which time it is possible that the entire question would have been settled by operations under the Olson bill.

Differences in Bills

The primary differences in the two bills are that the O'Donnell bill calls for minimum bids of 30% royalty on production of 200 bbls. to 999 bbls., 40% on 1000 to 1999 bbls. and 50% on 2000 bbls. and more, while the Olson bill requires a minimum of 30% flat on production of 200 bbls. or more. The Olson bill calls for not less than 10 wells per parcel at Huntington Beach, the O'Donnell bill for not less than five; the Olson bill prohibits the drilling of more than one parcel by any one company or interest, while the O'Donnell bill permits one interest to drill any number of parcels; the Olson bill requires a bond of $100,000 before operations can be started, the O'Donnell bill a bond of $50,000; the O'Donnell bill amends the general Land Leasing Act while the Olson bill does not and therefore lays itself open to possible attacks on the grounds of constitutionality; the Olson bill is administered by the Department of Finance under the Director of Finance, while the O'Donnell bill creates a commission composed of the Director of Finance, Director of Natural Resources, and Comptroller, under which it is to be administered.

Wagy Bill

Another bill signed by the governor and directly affecting the oil business, with an effect that will, according to all opinion, be decidedly helpful, is the Wagy bill strengthening the regulations governing the branding and selling of gasoline and lubricating oils. The bill requires that all products must be labeled with the brand name or that the words "no brand" appear on their containers, and that all reclaimed oils must be so branded.

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2. Anderson Standard Magnetic Survey Instrument secures a series of photographic readings of both inclination and direction in open holes. The 1½", 3¼" and 3½" O.D. Instruments are run on sand line or from Anderson hoist equipped trucks.

3. Anderson Photo-Record Magnetic Single Shot Survey Instrument makes a direct-reading photographic record of inclination and direction on a metal-rimmed disc. The large diameter instrument is 3¼" O.D. and is run in open hole on sand line or from hoist equipped trucks. Small diameter (2¼", 2" and 1½" O.D.) Photo-Record Magnetic Single Shot Survey Instruments are also available for use with wire line coring equipment.

4. Anderson Go-Devil, 1¼" or 1½" O.D. is dropped into the drill pipe to measure inclination. The accuracy of this instrument is within fifteen minutes.

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Field Development

Los Angeles Basin

38 Drillers, 61 Sites In Wilmington Area

There has been no lessening of activity at Wilmington, with drilling widespread throughout the field. A recent count showed 38 drilling wells, with locations, rigs, etc., for 61 more. A total of 151 wells was on production, with daily average production of the field holding around 46,000 bbls. Chief developments of interest during the past two weeks have been the staking of locations in the newly opened area within the Long Beach city limits; the successful completion of General Petroleum Corp. Ford No. 3 to prove the deep zone possibilities of the eastern portion of the field; the increasingly large wells to be obtained there; and the success of operations in the extreme northwesterly townlot area.

Locations have been staked by General Petroleum on the Blinn and Southern Pacific leases in the Long Beach Harbor area, to be drilled as soon as the necessary permits are obtained. These outpost tests will be watched with a great deal of interest, as many believe that the greater portion of the productive area lies in this direction. The company has also made location for three wells on the southerly end of the Ford lease which is beyond the Long Beach boundary line. Union Pacific has staked locations for five holes as offsets to the east, also in Long Beach.

The largest well to be completed at Wilmington to date is General Petroleum Ford No. 10, brought in from 4115 ft. for more than 4100 bbls. of 25.5 gravity oil, cutting less than 1%. Ford No. 9 was completed at 4122 ft. for 2650 bbls., and No. 14, completed from the upper sand at 3200 ft., is good for 1800 bbls. Union Pacific No. 33 is in from the same zone for 1900 bbls., offsetting the Ford lease to the northeast. No. 23, offsetting the General Petroleum Terminal discovery lease, made an initial of 2025 bbls. from 3450 ft. and No. 29, offsetting the Ford lease to the west, came in for 2720 bbls. from 3150 ft. All of these wells have since been greatly curtailed.

The deep zone test of the field, General Petroleum Ford No. 3, was drilled to 5651 ft., plugged back to 5390 ft., and completed from approximately 440 ft. of zone, flowing on the gas lift, for 640 bbls. of 29.5 gravity oil daily, cutting about 6% water and emulsion. Just how widespread the zone will be is a matter of speculation, but a definite reserve of higher gravity oil is assured for the immediate area.

In the northwest portion of the field north of Anaheim and west of Eubank, drilling centering around the Sonwell Co.'s extension well has resulted in consistently good completions. These include D. D. Dunlap No. 2 for 650 bbls.; Royalty Service Corp. Oilar No. 1 for 727 bbls.; Selegna Drilling & Producing Co. No. 5 for 550 bbls. and Macmillan Petroleum Corp. Hayes No. 2 for 690 bbls.

Holbrook Newhall Test Cemented At 5730 Ft.

At Newhall, the exploratory test of Holbrook Petroleum Co. has casing cemented at a depth of 5730 ft., and a production test will be made of a 90-ft. oil sand and shale zone encountered from that point to bottom at 5824 ft. First tests revealed that the water was not shut off and the casing has been recemented under pressure. The well is located near the state highway about two and one-half miles northwest of the town of Newhall in sec. 28, 4-16.

Barnsdall Oil Co. Rancho San Francisco No. 2 in sec. 26, 4-17, the second test of the structure discovered by the company, is being drilled ahead below 3600 ft.

Orco Oil Completes Huntington Beach Well

At Huntington Beach, Orco Oil Co., H. B. No. 1, a directed hole from the townlot area, has been completed on the pump for 350 bbls. of 24 gravity oil from a drilled depth of 5380 ft.

El Segundo Activity Gains After Recent Good Wells

El Segundo, the field of contradictions, where every well must be considered a semi-wildcat and where the amount of oil zone present apparently has little to do with the size of the well obtained, is to experience a revival of activity due to the recent series of good completions in the north and northwesterly portions of the area.

Locations have ben staked by Geo. F. Getty, Inc., for two tests in sec. 7, 3-14, to the north and east of The Ohio Oil Co.'s big well on the A. S. Gough property. To be known as E. S. No. 1 and Goodwin No. 1, the locations fall 330 ft. and 660 ft. respectively south of the center of the section, both being 220 ft. to the east of the west property line.

The major portion of new activity is centered around the intersection of El Segundo and Sepulveda Blvds. where Standard Oil Co. and The Ohio Oil Co. have recently brought in good producers. To the north of the Standard well, Ramsey & Wallace of Los Angeles are preparing to drill their initial test in the townlot area on a 35-acre community lease. Standard has made location for its second well on the refinery fee land, to be drilled approximately 550 ft. to the southwest of No. 1. The Texas Co. Security No. 3, offsetting Standard Refinery No. 1 to the east, is now drilling below 4000 ft., and the foundation is in for Security No. 4, about 660 ft. to the south of No. 3. The most northwesterly test of the field, Richfield Oil Corp. Elsie No. 1, is preparing to make a production test. This well was drilled to a depth of 7049 in broken schist, the conglomerate oil zone not having been encountered. However, the fractured schist gave good evidence of oil and casing was cemented at 6950 ft.

The completion of the week was The Ohio Oil Co. A. S. Gough No. 5, drilled near No. 4 which was abandoned after staging a blowout from an upper gas zone. Completed from a depth of 7357 ft., the well was brought in for a surprising initial flow of better than 1200 bbls. of 28.3 gravity clean oil per day. Daily production built up to a high of 1580 bbls. before being pinched back. Production is being obtained from a total of about 95 ft. of zone, the casing having been cemented at 7265 ft. This is by far the best well completed in this portion of the field to date, and demonstrates conclusively that the productive limits have yet to be defined to the north.

The Ohio Oil Co. A. S. Gough No. 4, to the northeast of El Segundo and Sepulveda Blvds., was completed on July 13 and is good for 490 bbls. of 26.4 gravity oil, cutting about 1%, with 200,000 cu. ft. of gas. No oil sand was recovered in this well, the conglomerate-schist zone being encountered at 7037 ft. and the hole being taken down to 7174 ft. in the fractured schist.

The only well active in the southeast portion of the field, Richfield El Segundo No. 6, was drilled to 7538 ft. in schist, the top of which was cored at 7521 ft. A formation test was made of the zone which gave good evidence of oil with considerable gas pressure and casing is being set to complete.

Republic Petroleum Co.'s offset to the east of The Texas Co.'s big producer, El Segundo No. 8, which was completed as a small pumper, was deepened into the schist to 7580 ft. in an effort to increase production. Swabbing tests indicated that, while the well would not flow, more fluid was entering the hole and that gas pressure had been increased. Returned to the pump, the well produced at a 250-bbl. rate of clean oil.

Union Completes Second Deep Rosecrans Producer

The second deep zone producer was completed at Rosecrans when Union Oil Co. Rosecrans No. 16 was brought in flowing 1205 bbls. of 33.2 gravity oil cutting less than 3%, with 700,000 cu. ft. of gas, through a 55/64-inch orifice. The well was bottomed at 7560 ft. and casing is set at 7245 ft. It offsets Barnsdall Oil Co. O'Dea No. 10, the discovery well, to the west.

To the northwest of the discovery well, Universal Consolidated Oil Co. Trust No. 1 was cored to 7588 ft. in oil sand and shale of the O'Dea zone. The hole was plugged back to about 7560 ft., and casing cemented at 7430 ft. for a production test.

The exploratory test to extend Miocene production to the southeast, Bolsa Chica Oil Corp. Exeter No. 3, is apparently in the doubtful class. Numerous bodies and streaks of oil sand intermingled with streaks of gray sand are understood to have been cored below 7300 ft., and casing has not been run to date. At last report the well was being cored below 7850 ft., the intention being to explore ahead at least another 100 ft.

Deepening Jobs Underway In Lawndale District

At Lawndale, the old Peck No. 9, recently taken over by A. A. Douglas and Associates, has been deepened to 7104 ft. from its original depth of 6400 ft. A blank liner has been cemented at 7080 ft. and it is planned to carry the well on down to the schist in an effort to obtain conglomerate production. It is understood that a fair looking oil sand and shale zone of about 200 ft. in thickness was cored below the old bottom. Young & Bryan have taken over the old Pan-Tex Oil Co. Peck No. 1, and are cleaning out the well to deepen.

San Joaquin Valley

Standard Greeley Well Makes 500 bbls. Daily

At Greeley, Standard Oil Co. K. C. L. 11-4 was deepened into the oil sand to 7804 ft. after a formation test with bottom at 7691 ft. showed the well capable of producing more than 500 bbls. of 58 gravity oil and 16,500,000 cu. ft. of gas daily with 55 ft. of zone open, casing being set at 7635 ft. The performance of this well, which is located about a half mile to the southeast of the discovery well and a third of a mile to the south of 11-3, which is also a very good producer, has been very satisfactory to date, and in view of the showing made by 11-5, located to the west of the discovery, it would seem more and more evident that the major portion of the field lies to the east. On the other hand, 11-2, situated between 11-1 and 11-4 could not be made to produce because of water trouble.

The northerly exploratory well of the field, K.C.L. 11-6, located about one-quarter of a mile north of No. 3, in sec. 17, 29-26 cored the top of the oil zone at 7723 ft., and casing is being set with bottom of the hole at 7765 ft. Derrick has been erected for 11-7, a quarter of a mile to the east of 11-3.

K.C.L. 12-1, located one mile to the south of 11-1, continues on a gas lift production test from a plugged depth of 7886 ft., and is making approximately 50 bbls. of 31.7 gravity oil and six barrels of water daily. Casing in this hole is at 7775 ft. No. 11-5, completed recently, has been pinched back to a flow through a 4/64-inch orifice, and is making 185 bbls. of 35.0 gravity oil, cutting 0.3%. K.C.L. 11-1 is now flowing 450 bbls. daily through a 14/64-inch orifice, and 11-3 is making 530 bbls. of 59.1 gravity oil with 8,000,000 cu. ft. of gas through a 24/64-inch flow bean.

North Mount Poso Area Extended By New Well

Extending the known limits of the new shallow productive area north of Mt. Poso more than a quarter of a mile to the southeast, the Ring-Vedder combination has completed Shapiro No. 1 in sec. 32, 26-28 on the pump for 350 bbls. of 15.7 gravity clean oil per day. The hole has a total depth of 1738 ft., with casing cemented at 1697 ft. The company is undertaking an active drilling campaign in the area with three wells being started. Bowles No. 3 is being drilled in sec. 29, 26-28, about 500 ft. to the east of the discovery well, Bowles No. 2; while the Shapiro completion will be offset to the northeast by Rogers-Jones No. 1 across the quarter corner in sec. 29, and by Bohen No. 1 to the east.

Shell Completes 10 Sections Well

Ten Section's only active well, Shell Oil Co. K.C.L. A-58 in sec. 29, 30-26, has been completed flowing 1800 bbls. of 32.7 gravity oil and 1,400,000 cu. ft. of gas from a plugged depth of 8225. The hole was drilled to 8366 ft., but some streaks of doubtful looking gray sand were encountered and the well was plugged back before the liner was run to complete. Casing is cemented at 7920 ft. No. A-4 has been rigged up in sec. 30, 30-26, and will be drilled immediately.

Ohio Abandons Test In 10 Sections Area

The Ohio Oil Co. K.C.L. E-2, exploratory test located nearly midway between Greeley and Ten Section in sec. 6, 30-26, has been abandoned. The hole was drilled to a total depth of 8770 ft. without showings of importance, and no tests were made.

New Wells Start After Hogan Completion

The recent good completion of Hogan Petroleum Co. on the Bankline-Symonds lease in the Mountain View southern extension area has served to add interest there, and several new wells will be drilled. Near the northeast corner of sec. 5, 31-29, Hogan Petroleum is drilling Geo. H. Peters No. 3, about a mile to the northwest along the trend from the recent completions. Mohawk Petroleum Co. is preparing to drill Earl Fruit No. 5 in sec. 4, while North American Oil Consolidated is rigging up to drill on the H. I. Tupman property due south of the Bankline-Symonds lease in sec. 9. Directly east in the same section, P. H. Greer Co., Inc., has derrick erected for its second test of the Perrel lease to be known as Perrel No. 1.

The No. 4 well of Mohawk Petroleum on the Earl Fruit lease, started shortly after the successful completion of the No. 3 extension discovery, and which was found to have been drilled on the wrong side of the controlling fault, was deepened from 5450 ft. to 5788 ft. in an effort to find an oil zone below the Chanac, but encountered only a few feet of poor oil sand, and is again standing idle. P. H. Greer Co. Perrel No. 2, an offset to the south, was also off structure, and was deepened to the schist, which was encountered at 6610 ft., without showings of importance.

Cal. Western To Drill North Of Round Mountain

Another well will be drilled by Calif. Western Oil Co. on the 160-acre Thomas lease north of Round Mountain on the northwest trend of the field. The derrick has been erected, the location, to be known as Thomas No. 3, being in the southeast quarter of sec. 12, 28-28.

Reserve Plugs Back, Testing Tejon Well

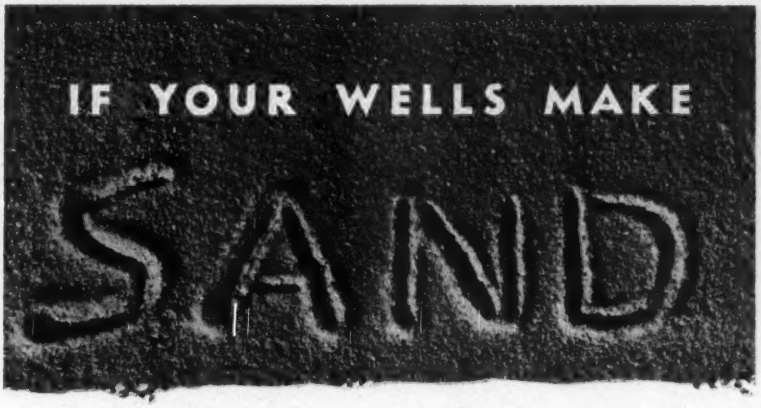
In the Grapevine area, Reserve Oil & Gas Co. No. 33-4, after deepening to 5443 ft. without showings of importance at that depth, has been plugged back to the shoe of the casing at 4541 ft., and the first 100 ft. of zone below the shoe is being tested by stages. The first plug was found not to have set, and the hole was replugged back into the casing under pressure. The plan is to retest the casing for water shutoff, and, if this is effective, to test the formation by short stages for production or to determine the point of entrance of water indicated to be present in previous tests. In the meantime, a gasoline absorption plant is in the process of construction by Rancho Gasoline Corp. of Los Angeles to utilize gas production from No. 33-3. This well is standing shut in at the present time, after a flow test made several weeks ago demonstrated its commercial value as a wet gas producer.

To the north, The Ohio Oil Co. deep test in sec. 21, 11-19, which was cored into basalt at a depth of 9642 ft., was bridged back to 6900 ft. and a series of production tests is being made of oil showings encountered directly above. The other active well of the area, Wilshire Oil Co. Tejon-Buffalo No. 1, to the southwest of the Reserve wells, is being cored ahead after having been delayed for several days by a fishing job at 4550 ft.

Arkelo Redrilling Deep Wasco Wildcat

After a fishing job lasting several months failed to recover the drill pipe stuck in the hole, the deep test of Arkelo Petroleum Co. in the Lerdo area has been plugged back to 7400 ft. and is being redrilled from that point. Located in sec. 23, 28-26, about 10 miles to the northwest of Bakersfield, the well was originally drilled to a depth of 10,056 ft. where some very promising showings are said to have been encountered. There is no casing in the hole below the surface string at 1000 ft., and it was while conditioning the well to set casing that the drill pipe was frozen.

Approximately four miles to the south of the Arkelo test, in sec. 12, 29-26, the deep test of the Continental Oil Co., K.C.L. B-1, is being cored ahead below 9900 ft. in brown shale, no showings having been reported.



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Coastal District

Santa Maria Valley Development Steady

Development continues at a steady pace in the Santa Maria Valley area, though it seems apparent that there is to be no period of highly concentrated activity here. The major portion of the acreage of the district is held in comparatively large blocks, and due to the quality of the oil and strict curtailment enforced by the lack of facilities for its disposal, drilling to date has been confined almost entirely to that made necessary by offset requirements, coupled with cautious exploratory work to define the productive limits and possibilities of the area.

Two wells have been completed recently in the proven area, both of which are offsets to A. N. Macrate's Fernandez No. 1 on the western side of the field. Union Oil Co. Mahoney No. 3, in sec. 24, 10-34, the northeasterly offset, was brought in from a depth of 3800 ft., and is pumping 250 bbls. of 15.8 gravity oil daily, cutting about 6%. The R. R. Bush-Hancock combination's Brown No. 2, to the east of the Fernandez well, is in from a depth of 3825 ft. and is apparently good for about the same figure.

In the Adam extension area two miles to the west of the field, Hobbs No. 1 of the Pacific Western Oil Co. has been completed flowing by heads at a 400-bbl. rate, and has been put on the pump. This well, which is located in sec. 21, 10-34, is a direct easterly offset to Union Oil Co.'s discovery well, O'Donnell No. 1. Work has been started on Hobbs No. 4 approximately one-third of a mile to the south of No. 1, offsetting the recently completed Union Russell No. 1. Russell No. 2 is being drilled by Union directly south of O'Donnell No. 1. The second producer of the area, Russell No. 1, has been shut in after building production up to a 450-bbl. rate of 17.3 gravity oil per day, with a cut of less than 1%.

A mile to the west of Adam near the state highway in sec. 27, 10-34, the test well of the Sed Oil Co. on the narrow Mills strip is drilling below 2000 ft. It is understood that M & S Oil Co. of Long Beach will drill immediately on a five-acre lease directly north of this well.

R. R. Bush and Hancock Oil Co. combination is preparing to drill a second well on the Hopkins lease in the eastern portion of the field, 660 ft. to west of the No. 1 producer in sec. 30, 10-33. This well will probably be offset by Union on the Vincent lease to the north.

Shell Abandons Two Monterey County Wells

Shell Oil Co. Branch Nos. 1 and 2, located in the San Antonio Hills area of Monterey county, have been abandoned, apparently bringing to a conclusion two years of prospecting in sec. 34, 24-10, some thirty miles to the southeast of King City. After suspending operations on Branch No. 2 at a depth of 8662 ft., the company resumed work on No. 1, which had been standing idle at a depth of 8994 ft. The hole was plugged back to 8670 ft., and several shots were placed in an effort to fracture the hard formation to allow fluid to come in, but without success.

Production Test May Be Made In Carreaga Well

In the Carreaga area to the southeast of Santa Maria, in sec. 8, 8-23, E. C. Arnold Oil Corp. Arnold-Apache No. 2 is being cored ahead below 5200 ft. in brown shale showing some oil in the fractures, and a production test may be made soon. The top of the Monterey was encountered at approximately 4920 ft.

Los Alamos Test Coring At 3800

Los Alamos No. 2, the exploratory test of Hancock Oil Co. and Petroleum Securities Co., located to the south of Los Alamos in Santa Barbara county on sec. 6, 7n-32w, is being cored ahead below 3800 ft. in hard shale, with some oil and gas showings noted. The Monterey has not yet been encountered. The No. 1 test, abandoned some time ago, was drilled to a depth of 4800 ft.

Continental Completes San Miguelito Well

Another excellent producer was completed recently by Continental Oil Co. in San Miguelito, when Grubb No. 7 was brought in from 6860 ft. for an initial production of 1042 bbls. of 37.9 gravity oil daily, together with 1,200,000 cu. ft. of gas. A potential of more than 1200 bbls. per day was established, and the flow was pinched back to 750 bbls.

Vanguard Starts Derrick For San Luis Obispo Test

Vanguard Oil Co. headed by Cliff Baker, has staked location and completed road work for the drilling of Clarke No. 1, sec. 26, 27s-14e, San Luis Obispo county. A 130-ft. wooden derrick is now under construction and the well will be spudded in at the earliest possible date.

The company has 640 acres under sub-lease from the Producers Land Co., 160 acres of which have been acquired by the Hancock Oil Co.

Although the Latin American well drilled several years ago in sec. 31, 27s-15e, is considered by geologists to be definitely off structure, sufficient showings of oil and gas were encountered to make the test most interesting.

California Crude Oil Production

For Two Weeks Ending July 13, 1937

Field	July Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	13,935	15,473	1,538
Belridge—South	1,955	1,630	*325
Buena Vista	17,920	18,488	568
Coalinga—East	11,890	10,025	*1,865
Coalinga—West	5,305	5,266	*39
Coffee Canyon	4,395	4,989	594
Edison	3,725	4,428	703
Elk Hills	8,730	10,209	1,479
Fruitvale	8,685	9,812	1,127
Greeley	1,120	1,264	144
Kern Front	10,265	10,651	386
Kern River	5,245	2,570	*2,675
Kettleman No. Dome	79,880	79,729	*151
Lost Hills	4,675	3,510	*1,165
McKittrick	3,735	4,128	393
Midway-Lakeview	10,090	18,545	8,455
Midway-Maricopa	37,100	40,129	3,029
Mount Poso	15,845	16,894	1,049
Mountain View	17,910	18,611	701
Round Mountain	7,450	7,013	*437
Ten Section	2,285	2,733	448
Other Fields	3,085	3,225	140
TOTAL	275,225	289,322	14,097
Coastal District			
Elwood	8,130	8,712	582
Rincon	2,280	2,699	419
Santa Maria	13,685	10,718	*2,967
Santa Paula-Newhall	5,065	4,950	*115
Ventura Avenue	31,980	34,675	2,695
Other Fields	6,090	7,569	1,479
TOTAL	67,230	69,323	2,093
Los Angeles Basin			
Alamitos Heights	1,315	1,614	299
Brea-Olinda	9,020	7,788	*1,232
Coyote—East	2,840	4,028	1,188
Coyote—West	9,425	7,137	*2,288
Domingues	24,590	26,829	2,239
El Segundo	2,950	7,656	4,706
Huntington Beach—New	17,160	20,163	3,003
Huntington Beach—Old	14,710	17,256	2,546
Inglewood	15,510	16,479	969
Long Beach	56,090	59,731	3,641
Montebello-Extension	8,700	9,072	372
Playa del Rey	8,360	8,617	257
Richfield	7,615	9,342	1,727
Rosecrans-Athens	2,075	3,208	1,133
Santa Fe Springs	39,370	44,075	4,705
Seal Beach	7,735	7,204	*531
Torrance-Hermosa and Extension	6,770	8,735	1,965
Wilmington	24,330	45,307	20,977
Other Fields	1,970	2,151	181
TOTAL	260,535	306,392	45,857
STATE TOTAL	602,990	665,037	62,047

*—Shortage.

El Rio Oils Well Pumps Small Quantity Of Oil

The exploratory test of El Rio Oils east of Oxnard in Ventura county has been put on a pumping production test and has been making heavy oil at a rate estimated at anywhere from 25 to 90 bbls. per day, showing a cut of 10% of mud, water and emulsion, the gravity of the oil being 13.8 degrees. While the performance of this well has been disappointing in view of the promise shown during the first tests of the zone, it is the best made to date in the area and has resulted in widespread leasing by companies and individuals. Work is underway on the Oxnard Oil Co.'s initial test just south of the south city limits of the town of Oxnard on the Vanoni property.

State Drilling Report

Field	Company	Well	No.	Sec.	Twp.	Range
NEW WELLS						
Wilmington	General Petroleum Corp.	Blinn	1	35	4S	13W
		Ford	30, 32 & 35	4	5S	13W
		S. P.	1	3	5S	13W
	Union Pacific Railroad Co.	U. P.	39, 40, 41, 42	33	4S	13W
		U. P.	38 & 44	34	4S	13W
		U. P.	43 & 45	4	5S	13W
	The Texas Co.	Refinery	1	34	4S	13W
	Sonwell Oil Co.	Sonwell	2	32	4S	13W
	Bankline Oil Co.	Domingues Harbor Comm.	19	34	4S	13W
	Royalty Service Corp.	Gilmore	842-2	33	4S	13W
	Holly Development Co.	Domingues	2	33	4S	13W
	Burnoel Petroleum Co.		586-A1	33	4S	13W
Richfield	Arrowhead Oil Co.	Bradford	2	32	3S	9W
El Segundo	The Texas Co.	Security	3 & 4	18	3S	14W
Huntington Beach	Union Oil Co.	Brooks	10	34	5S	11W
Orange County	A. S. Johnston Drilling Corp.		30	20	5S	11W
Los Angeles County	Hilldon Oil Co.	Amelia M.E.Bixby	1	13	4S	13W
Ventura County	Oxnard Oil Co.	Oxnard	1	10	1N	22W
	The Texas Co.	Pierce	1	20	2N	21W
Ventura	Shell Oil Co.	Taylor	90	30	3N	23W
Capitan	Shell Oil Co.	Covarrubias	1-25 & 1-26	32	5N	30W
Santa Maria Valley	R. R. Bush Oil Co.	Hancock-Bush-Rosenbloom	1	25	10N	34W
		Hancock-Bush-Hopkins	2	30	10N	33W
	Pacific Western Oil Corp.	Hobbs	4	21	10N	34W
Lost Hills	Tidewater Associated Oil Co.	Williamson	12-D	11	26S	20E
Midway	Lilly Oil Co.	Lilly	2	36	32S	23E
Belridge	Belridge Oil Co.		53-26	26	27S	20E
Elk Hills	Richfield Oil Corp.	Crampton	1-H(A)	1	31S	24E
Kern River	M. H. Whittier Co.	Cauley	5	16	28S	27E
	Oils Inc., of Calif.	Seven Spot	3	13	28S	27E
	Standard Oil Co.	Ward Fee	6	24	28S	27E
Mount Poso	Union Oil Co.	Tribe	12	28	27S	28E
	Ring Oil Co.	Shapiro	1	32	26S	28E
Mountain View	North American Oil Cons.	Tupman	1	9	31S	29E
	Mohawk Petroleum Co.	Earl Fruit Co.	5	4	31S	29E
	P. H. Greer Co., Inc.	Perrel	1	9	31S	29E
Edison	A. T. Jergins Trust	Grayson	16	10	30S	29E
Round Mountain	Honolulu Oil Corp.		12	18	28S	29E
Kern County	J. J. Tavis	Olcese-Tavis	1	4	29S	29E
Trico	Standard Oil Co.	H. C. Morris	1	36	24S	23E
DEEPEN OR REDRILL						
Montebello	Universal Cons. & Richfield Oil Corp.	Farmer	1-J	5	2S	11W
Whittier	R. B. Grainger		2	22	2S	11W
Long Beach	Shell Oil Co.	Marcellus	4	20	4S	12W
	Petroleum Securities Co.	Wilson	1	29	4S	12W
	Geo. W. Smith	Mack	1	19	4S	12W
	California Re-Drill, Inc.	Fee	7	29	4S	12W
Santa Fe Springs	Standard Oil Co.	Santa Gertrudes	3-A	31	2S	11W
Huntington Beach	W. K. Co.	W. K.	3	10	6S	11W
	Union Oil Co.	Brooks	6	34	5S	11W
Inglewood	The Texas Co.	Moynier	1	8	2S	14W
Torrance	E. H. Grubbs		3	14	4S	14W
Seal Beach	Trinity Oil Corp.	Getty	12	3	5S	12W
Coyote Hills	Standard Oil Co.	Murphy-Coyote	70	17	3S	10W
Rincon	Rincon Oil Co.	Shudde	3	7	3N	24W
Ventura	Shell Oil Co.	Edison	8	28	3N	23W
		Taylor	33	28	3N	23W
Santa Maria Valley	Union Oil Co.	Vincent	2	30	10N	33W
Round Mountain	Eastmont Oil Co.	Olcese	1	16	28S	29E
Edison	A. T. Jergins Trust	McCowan 13-B	7	13	30S	29E
Coalinga	Italo Petroleum Corp.	Section Seven	4	7	20S	15E
	Union Oil Co.	Iredell	7	13	20S	14E
Midway	Petrolia Corp.		5	21	31S	22E
Sunset	Hancock Oil Co.	Maricopa	3	8	11N	23W
Elk Hills	Richfield Oil Corp.	Crampton	2-B	6	31S	25E
Mountain View	Mohawk Petroleum Co.	Hood	4	30	30S	29E
ABANDON						
Playa del Rey	Williams Oil Co.		1	28	2S	15W
	Sharby Oil Co.	Sharby	1	22	2S	15W
Los Angeles County	Geo. Goodrum	Charter Oak	1	7	1S	9W
Newhall	Republic Petroleum Co.	Fink	4	12	3N	16W
Sespe	B.A.Laselle & J.L.Van Dissen	Border Oil Co.	1	8	5N	19W
San Luis Obispo County	Gretna Corp.	Maino-Gonzales	1	24	30N	10W
Midway	B-Zone Oil Co.	B-Zone	1	22	32S	23E
	Western Mesa Oil Corp.		35	14	31S	22E
Sunset	The United Oil Co.	Triangle	2	32	12N	23W
Mountain View	Savoy Oil Co.	Whittekin	2	34	30S	29E
Edison	Superior Oil Co.	Cohn	1	12	30S	29E
Elk Hills	Richfield Oil Corp.	Crampton 1-H & 8-H	1	31S	24E	
Kern County	The Ohio Oil Co.	KCL-E	2	6	30S	26E
	Superior Oil Co.	KCL	8	11	30S	26E
Fruitvale	Mesa Petroleum Co.	La Barte	1	23	29S	27E

Summary	Past Two Weeks	Previous Two Weeks	To Date This Year	To Date Last Year
Total New Wells	49	53	839	556
Total Deepened or Redrilled	25	25	387	466
Total Abandoned	16	15	268	283

LAUGH THIS OFF

Being decidedly undersized is a handicap in the industrial world which you big hefties in the oil business can never fully appreciate. We were made very conscious of the fact just a few nights ago, when after a C.N.G.A. meeting we found that for some unknown reason our chariot refused to start, and we were obliged to take a street car home. We hadn't ridden more than a block when a stout lady came in and sat down on top of us. Rising immediately she remarked, "Oh, I'm sorry. I thought it was just something painted on the seat".

Which, if we were addicted to such inanities, we might term a summer squash.

And now let us hasten to the local scandal: We have just read that the Richfield is going into an intensive drilling campaign, which reminds us we have never mentioned the fact that they have acquired the services of one of our best geological friends. **Hoots** my dear!

The full name, of course, is **Harold Hoots,** and strangely enough he was just telling us an astonishing story the other day about one of his buddies who went down a dark alley over in Hollywood recently and ran into something. You can imagine his surprise when he found it was a cocktail bar.

On this same subject, **Tommy Evans,** the G. P. pipeliner, tells us of a certain oil man who used to like to set them up pretty often, but has now so far reformed that he never takes a drink excepting when he is alone or with somebody.

And the Signal Hill worker who sat on a hot steam pipe turned in to the safety supervisor a very interesting tale that was based on stern realization.

Rae Warden, the Brea impressario, knows a pumper out Brea way who has a family of 10, and they were all racing for a bus a few days ago, with the dad leading the sprint. Suddenly from nowhere a cop ran in and intercepted the old man. "Hey, you", he asked, "What have you been up to?" "Why, nothing", panted the breathless pop. "Well", sez the bull, "What's all this mob chasin' you for?"

While we are speaking of children, by the way, it sounds preposterous, but **Bill Welch** swears a young couple in the Fullerton district are feeding their new baby garlic so they can find him in the dark.

And Dick Herndon says you should never hire a taxi. It's cheaper to buy one.

We are also in receipt of a communication from our erstwhile buddy, **Red Wilson,** to the effect that a Torrance gauger has sent his wife on a vacation to the Thousand Islands, and is trying to prevail upon her to spend a month on each one.

It was Red who used to tell us about the tough rig builder up in Ventura who manicured his finger nails with a buzzsaw.

Earl Stillwell, incidentally, interviewed a poor lad the other day who had a good position at Boulder, but when the construction was completed he lost his dam job.

After all, however, there is really nothing in this life that's eternal, unless maybe money. It seems to go all the time.

Ralph Rosborough now sends one down from San Luis Obispo about the local schoolboy in geography class who was asked by his teacher, "What is a strait?" He must have been an oil man's son, because he promptly replied, "I don't exactly know, but I know it beats three of a kind."

And speaking of a certain young lad who very industriously but very unsuccessfully dolls up and goes chasing the ladies about seven nights a week, **Percy Morton** remarks, "He's just like a book". "Howcum? sez **Bob Keyes.** "Well", explains Percy, "He's always getting turned down at the corners".

Did you notice, by the way, that the street car conductors are now giving one ring with each fare?

When **Harry Farquhar** sent the office boy out for some typewriter supplies, he came back with a package of Spearmint and a box of chocolates.

WHEN THE BOSS LOOKS DAGGERS AT YOU AND YOUR STOCK STARTS GOING DOWN to BOTTOM,

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NEW EQUIPMENT

■ New designs, many never before shown, of modern equipment for exploration, drilling, production, pipe line, refining and gasoline plants.

EQUIPMENT IN OPERATION

■ Application of new designs and improvements, including the actual drilling of several holes . . . the demonstration of gun perforators, formation testers, geophysical instruments, modern coring units, and many other interesting developments.

LATEST DEVELOPMENTS IN PIPE LINE CONSTRUCTION

■ The latest developments in pipe line building, including welding methods, pipe handling, cleaning, coating and wrapping equipment in action.

METALLURGICAL DISPLAYS

■ Steel and metallurgical displays, including single exhibits costing more than $10,000 to prepare.

NEW INVENTIONS

■ Inventors' section, where free space will be devoted to introducing new products developed but not yet on the market.

CONVENTIONS

■ Meetings, such as the annual national convention of the Independent Petroleum Association of America, the American Gas Association convention, and others.

TECHNICAL MEETINGS AND CONTESTS

■ Technical meetings, including the Directional Drilling Meeting, Export Committee Meeting of Foreign Buyers and Manufacturers, Technical Refinery Meeting, Conference on Refinery Measurement and Control, Safety Meeting, National Petroleum First Aid Contests, Production Committee Meeting, and a meeting devoted to Drilling Development.

ENTERTAINMENT FEATURES

■ Entertainment, including the Annual Oil Men's Dinner; Safety Engineer's luncheon and dinner; Motion pictures by the U. S. Bureau of Mines; and other technical and educational films; U. S. Army searchlight demonstration; several large bands.

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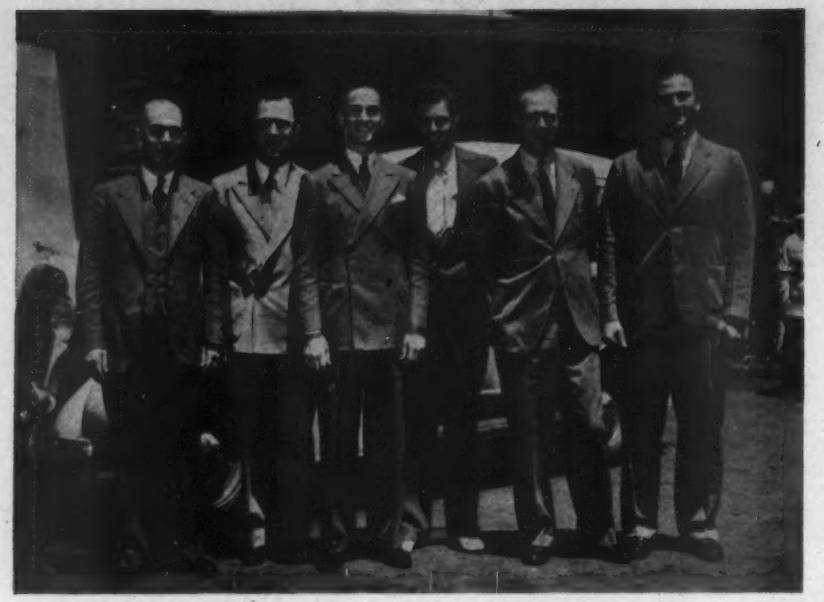
Associated Expands Dealer Crew



Enlarging its dealer development crew to include the entire Pacific Coast territory, Associated Division, Tide Water Associated Oil Co. has appointed four new members to its crew staff. Left to right they are: L. V. Islip, H. H. Rantzow, R. E. Walsh, K. P. Moffatt, J. R. Johnson and Norman Taylor. Moffatt and Taylor have carried on the development for the past two years and will assume charge of the Northern California and Washington-Oregon territories respectively. Rantzow will have charge of the Southern California district.

Following two years successful experimental work with its dealer development crew, Associated Division, Tide Water Associated Oil Co. has increased its dealer contact to three crews for the Pacific Coast territory, according to P. E. Allan, domestic sales manager.

Concluding a two-day conference in San Francisco, when the dealer development plan was thoroughly outlined, the three crews took the field in their respective territories, one in Oregon and Washington, one in Northern California and one in Southern California.

The crews, consisting of two men each with a specially equipped automobile, are constantly to be in the field, contacting Associated dealers and offering them assistance in merchandising practices for the sale of petroleum products and accessories. The experimental crew, which has been in the field for the past two years, has proved so successful in aiding the dealer that the additional two crews were employed to carry on the work more extensively in given territories.

At the two-day development conference under the direction of Harold R. Deal, sales promotion and advertising manager of Associated, company executives and department heads were heard. Among those who discussed the wide scope of topics dealing with dealer development were P. E. Allan, domestic sales manager, W. A. Reanier, white oil sales manager, M. W. Pease, assistant merchandising manager, and F. L. Wagar, manager of automobile lubrication.

The dealer development crew which for two years has successsfully covered the western territory consists of K. P. Moffatt and Norman Taylor. The crew members newly added are L. V. Islip, H. H. Rantzow, R. E. Walsh and J. R. Johnson.

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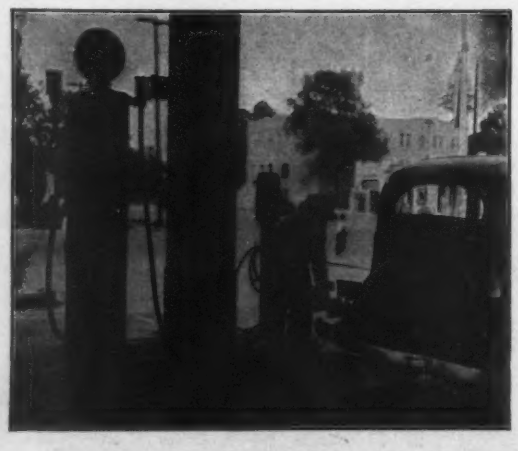

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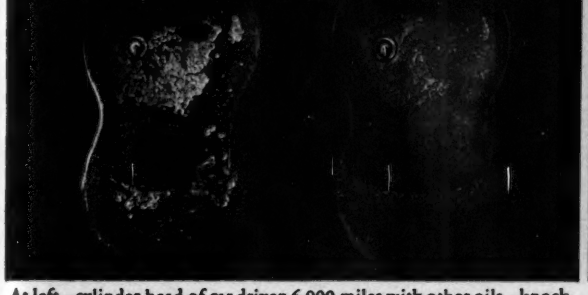
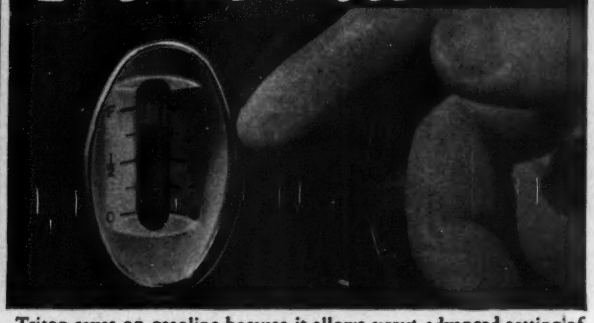


At left—cylinder head of car driven 6,000 miles with other oils—knocking badly. At right—same cylinder head 3,000 miles after motor was switched to Triton—carbon actually cleaned out till knocks stopped!

2 SAVES GASOLINE



Triton saves on gasoline because it allows *correct*, advanced setting of spark—without carbon "ping." You get maximum power and efficiency from your motor—extra mileage from every tankful of gasoline.

3 SAVES OIL DRAINS

Triton saves on oil because it has extreme resistance to oxidation or "breaking down" under operating conditions. It is a safe, full-bodied lubricant long after other oils are worn out.

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THAT IS OUR PLEDGE OF RESPONSIBILITY TO YOU.

RICHFIELD

Development, Characteristics of Atmospheric Cooling Towers

By
G. Russell Nance and H. A. Dresser
Fluor Corp., Ltd.

The majority of industries throughout the world using processes involving a heat exchange are confronted with the problem of obtaining a supply of cold water. A rough estimate would show that cooling water is required for the manufacture of nearly 75% of all processed goods. We who are closely connected with the petroleum industry are familiar with its uses in nearly all phases of oil and gasoline refining and are able to appreciate the availability of an abundant supply of cool water.

Such supplies are found in nature as oceans, lakes, rivers and wells, and water from one of these sources may be the solution of a cooling problem. Thus, in the East and to a certain extent in the West, we find industries springing up near large bodies of water. But along with such a free supply of water often comes a disadvantage in not being able to obtain water suitably free from acids, salts and other pollution, all of which are injurious to plant equipment.

To protect the available streams in the East, several states have passed laws requiring that that all water used for cooling purposes must be returned to the source at its original temperature, thereby requiring the use of a cooling tower or cooling pond.

As the cost of water increases it is less expensive to recirculate a given quantity of water through a cooling system and have it cooled at the expense of the atmosphere than it is to use a fresh supply of water only once before it is discarded.

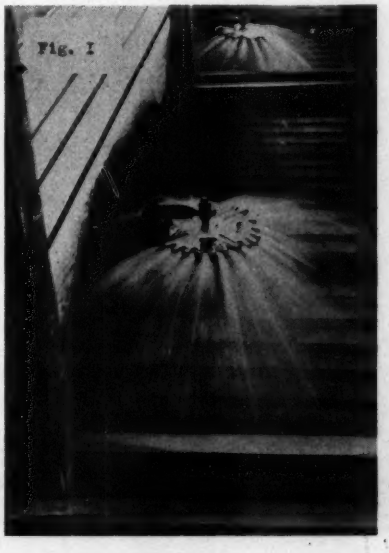
To meet this economic demand, cooling ponds, spray ponds and cooling towers have been developed, the performance of which is dependent upon an equilibrium between the water vapor and the air in the tower or above the pond. The general atmospheric condition is one in which the state of the water vapor is comparable to superheated steam, to wit, there is not enough water vapor present to saturate the air at the existing temperature. Thus there is a tendency for the gas-vapor mixture to absorb additional water vapor and approach a saturated condition at the atmospheric temperature.

The state of the gas-vapor mixture can be determined by the use of dry and wet-bulb thermometers and a barometer. For conditions under which the atmosphere is saturated the two thermometers will

G. R. Nance and H. A. Dresser

give the same reading. In the superheated condition, however, the wet-bulb reading will be lower than the dry-bulb reading. By use of the Ferrel Equation and steam tables the corresponding vapor tension can be determined and properties of the air-water vapor mixture may then be calculated by means of the perfect gas laws with only a small degree of error.

Experiments have shown that the wet-bulb thermometer obtains a steady reading for any given state. Thus it has been found that an equilibrium exists between the rate of heat transfer from the air to the film surface of the wet-bulb thermometer and the rate at which the heat absorbed is used to evaporate this water film. The heat transfer rate from the air to the water is substantially proportional to the difference between the dry and wet-bulb thermometer readings, known as the wet-bulb depression, and the film coefficient of heat transfer. The rate of heat absorption is a function of the latent heat of vaporization, the coefficient of vapor diffusion and the difference between the saturation pressure at the dry-bulb temperature and the actual partial pressure of the water vapor in the air. A more detailed discussion of this subject it to be found in any of the advanced books of thermodynamics.



With reference to the preceding remarks concerning the rates of heat transfer and evaporation, it can be seen that the cooling to be obtained from an air-water vapor system will be influenced by the conduction of heat from the water surface to the surrounding air, the radiation of heat in the same direction and the vaporization of the film surface. The amount of heat by radiation is quite small because of the low absolute temperature and small temperature differences. Conduction, and also convection, are more important but are dwarfed in comparison with the cooling effect obtained from evaporation.

Since evaporation is a function of the film coefficient of heat transfer and the coefficient of vapor diffusion it follows that the cooling obtained from such a system is a function of the water surface. Thus the problem in atmospherically cooling water is to present as large a water surface to the air as is economically practicable.

Atmospheric water coolers are built in the form of cooling ponds, spray ponds and cooling towers, the latter being either natural, induced or forced draft.

Cooling Ponds

Cooling ponds rely upon the evaporation of water from a quiet surface to bring about the necessary change in temperature. Because of this, and other physical reasons, the temperature drop obtained with such a system is relatively small per unit volume of water circulated and the area of the pond surface is relatively large to handle a given heat load. As a means of comparison, in order to cool 3000 gpm from an initial temperature of 110°F to a final temperature of 90°F, the wet-bulb temperature being 70° F and the wind velocity five miles per hour, approximately 1800 square feet of pond surface are required whereas a natural draft tower 54′ long, 12′ wide and 35′ high can handle the same heat load in a much smaller ground space.

The use of sprays in conjunction with a

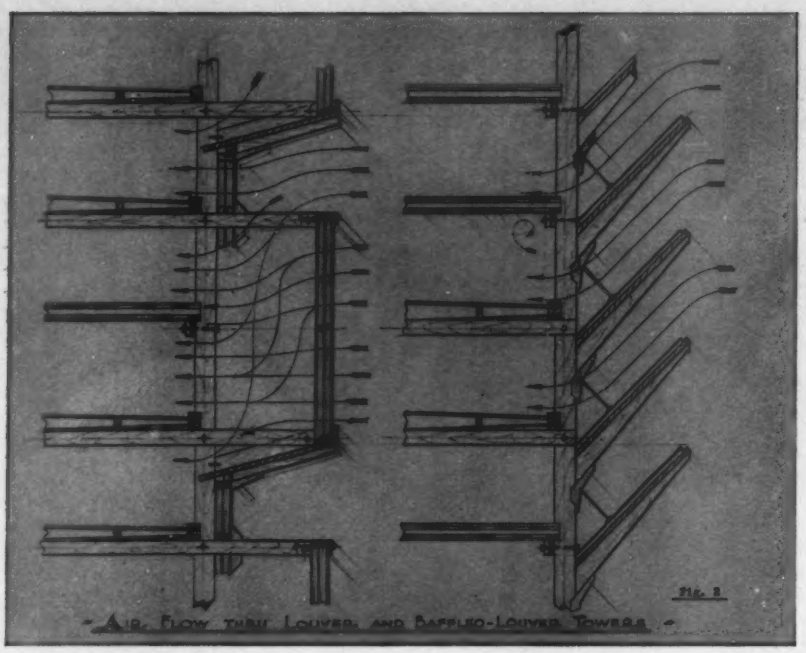


Fig. 2

Air Flow thru Louver and Baffled-Louver Towers

pond effectively increases the area of the evaporating film surface and because of this spray ponds can handle a larger load per unit of pond area than can a pond alone.

Both types of ponds have a first cost approaching that of a cooling tower. They require a large area in or nearby the plant site which is not always convenient or economically justifiable. Because of their nearness to the ground surface they are not able to have the advantage of the higher wind velocities found above the surface of the ground. Thus a water cooling tower is generally preferable to either type of cooling pond. Because of time limitations the rest of this paper will be confined to the natural draft, or atmospheric, type of water cooling tower.

Atmospheric Cooling Tower

The prevailing type of tower consists of a vertical framework on the sides of which are attached various types of baffles or louvers to keep the water from being blown out of the tower. Water to be cooled is pumped to the top of the tower, broken up into small drops, and allowed to fall into the tower basin, the water being cooled by evaporation, etc., during its fall. It was realized that an unbroken fall of the water from top to bottom of a tower did not give the optimal cooling performance since only one film surface per drop was exposed to the air and the time of fall was too short. Thus the greater the number of times a drop could be broken up, its particles uniting with particles from other broken drops, and a new drop with a new evaporating surface formed, the greater was the amount of heat which could be extracted from the water.

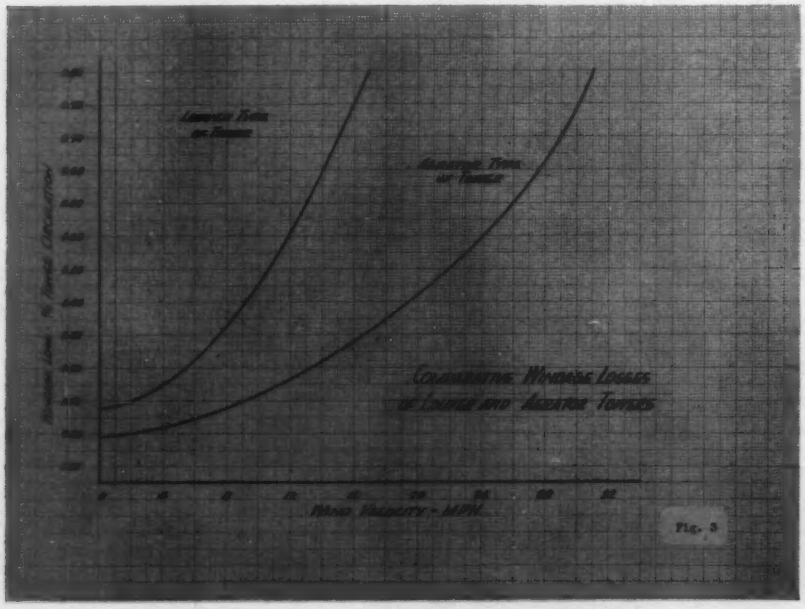


Fig. 3

Comparative Wetting Losses of Louver and Atomizing Towers

Various types of decks and retainers have been tried in the industry. Fire screens, battens having various cross-sections such as triangular, half round, fluted tops, etc., and other types of refinement having a rather doubtful utility have been tested and discarded because of their impracticability.

Manufacturers then tried a single row of battens placed upon their sides and resting upon cleats. These gave more satisfactory operation than any of the previous arrangements, but it was felt that a better deck was still to be found. Consequently double-bowed staggered-batten decks were developed. In this deck the battens and cleats were arranged so that the deck was better supported, and additional reinforcing material prevented trouble previously experienced from sagging.

Bowed Decks

The decks have been bowed to distribute the water falling through the tower more evenly. Water has a tendency to concentrate on the upper central portion of the deck, and bowing nearly completely eliminates this fault. Past experience has shown that rough battens are superior to surfaced battens because of their increased surface. A deck spacing of two to four feet has been found to be the most satisfactory, both from an economical and a structural standpoint. As a matter of interest, a 10% reduction in tower size resulted by using a double deck in place of a single batten deck.

Without an initial even distribution of water over the tower decks the best cooling cannot be obtained, and the use of well designed decks is partially offset. Many different types of distributors have been tried. Troughs, launders, sprays, splash plates and nozzles have all had a thorough testing during the past years.

A finely divided spray, initially obtained, is equivalent to a slight increase in tower height and results in better cooling.

The problem which confronted designers was to develop a distributing system

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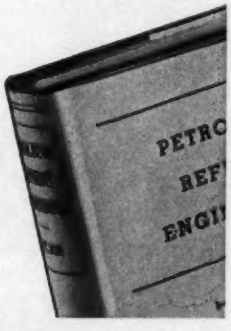

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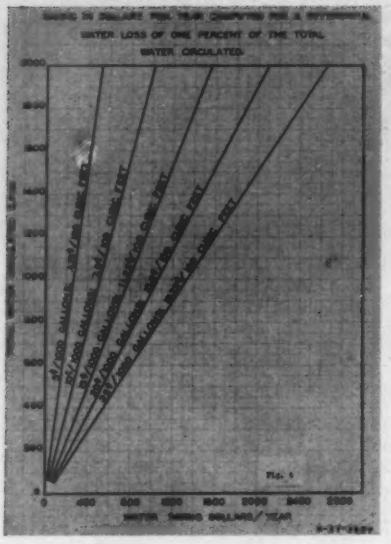
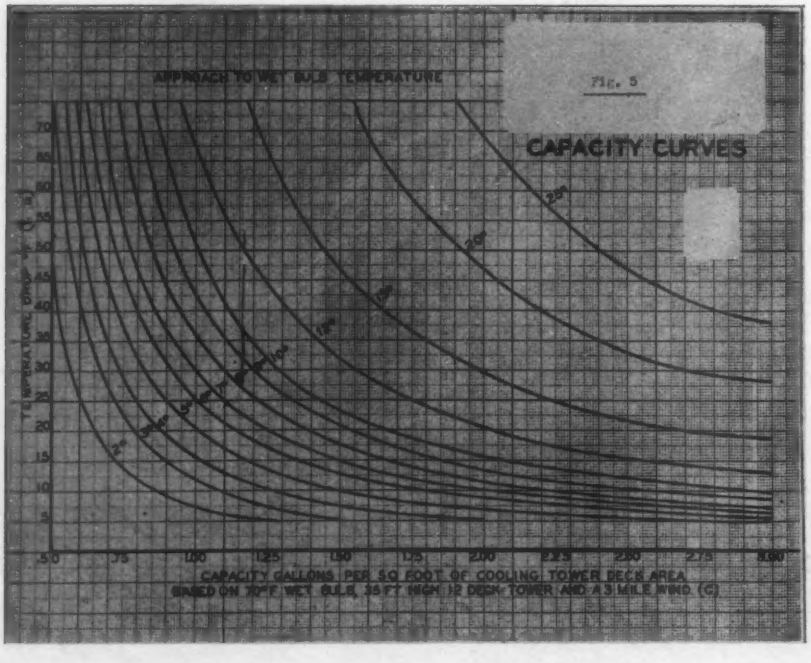


which would break up the tower water into droplets as small or smaller than those falling between the decks and yet require only a small pressure drop for its operation. Troughs having serrated edges, spray plates, splash plates and other similar designs are now in use.

One solution of this problem was finally obtained after experiments with many different arrangements had been performed. The result was the development of a venturi-shaped orifice which discharges the water vertically into the air against a plate shaped like a hyperboloid of revolution with its vertex downward and having rows of teeth placed about the periphery against which the water is deflected. Figure I shows this type of distributor in operation.

The orifices are made in several sizes to handle various quantities of water. The spray plate is adjustable axially and can be set to control the spread of the water over the distribution deck. The pressure drop through such a system varies from one-and-one-half to three feet of water. The nozzles are so designed that they are not readily clogged by algae and other foreign matter circulating in the tower water.

Occasionally a question arises as to the comparative value of a low pressure distributor and a finely atomized spray such as that obtained by using a greater pressure drop. Both types have their desirable features. A finely atomized mist will present a much larger cooling surface at a time when the cooling potential of the water is the greatest. This finely divided spray is rather short lived, however, since the small drops coalesce into larger drops and new drops are formed upon leaving the distributing deck. If the water is sprayed into the air a suitable spray wall is necessary to prevent too high a water loss due to windage. Thus the additional cooling obtained by the use of a spray system must be written off against the increased pumping charges necessary to maintain the pressure drop through the nozzles, and these charges, during the course of a year, may more than offset the added cooling obtained through the use of sprays. While low pressure distributors do not give as finely divided a spray as do pressure nozzles, they do not have the disadvantage of of requiring a pressure drop of five or more pounds per square inch for operation, and are not clogged by material which would ordinarily clog a spray nozzle having a smaller orifice.


APPROACH TO WET BULB TEMPERATURE
Fig. 5
CAPACITY CURVES
CAPACITY GALLONS PER SQ FOOT OF COOLING TOWER DECK AREA
BASED ON 70°F WET BULB, 35 FT HIGH 12 DECK TOWER AND A 3 MILE WIND (C)

Baffles

In order to prevent the wind from blowing a large part of the tower water outside of the basin area various types of baffles have been used. Until recent years louvers have been used almost exclusively. Louvers generally fall into two classes; the large type, consisting of approximately five to seven eight-inch wide louver boards placed side by side and forming a single louver panel, and the small type, in which a louver panel is made of a single board only, whose width may vary from six to twelve inches.

Because of the wind-blown spray losses occurring during periods of moderate and high velocities, a need was felt for a tower which would give as satisfactory cooling as that obtained with a louver tower and yet conserve on the amount of makeup water necessary. The wind-blown spray constituted a real problem on days of high winds since in many cases the water was blown out of the tower faster than it could be replaced. This not only necessitated the shutting down of a part of the plant but also was expensive, and the wind-blown spray had a detrimental effect on the surrounding property. Thus, coupled with these reasons and because of increasing water costs, a campaign for water conservation was begun.

Various deflectors, known as drift eliminators, were tried on the louver towers. These took the form of baffles which were used in an attempt to prevent the water from blowing out of the leeward side of the tower. Baffles, consisting of strips of battens, were suspended inside of the louvers. Single, and then double, rows of battens were used, the battens running horizontally. The water droplets would be stopped when they hit the batten surface, but in falling from the batten they were caught in the air stream and blown from the tower. Experience showed that the horizontally battened eliminators only negligibly reduced the spray loss and materially decreased the cooling capacity of the tower due to the decreased air flow over the cooling decks.

Eliminators were then made having battens which ran vertically. These were more successful in reducing the spray loss since the water droplets ran down the batten and back inside of the tower, but the cooling capacity of the tower was again decreased when the wind was not blowing so hard. To overcome this difficulty adjustable drift eliminators were developed. These were placed inside of the louvers and could be opened or closed by means of gear

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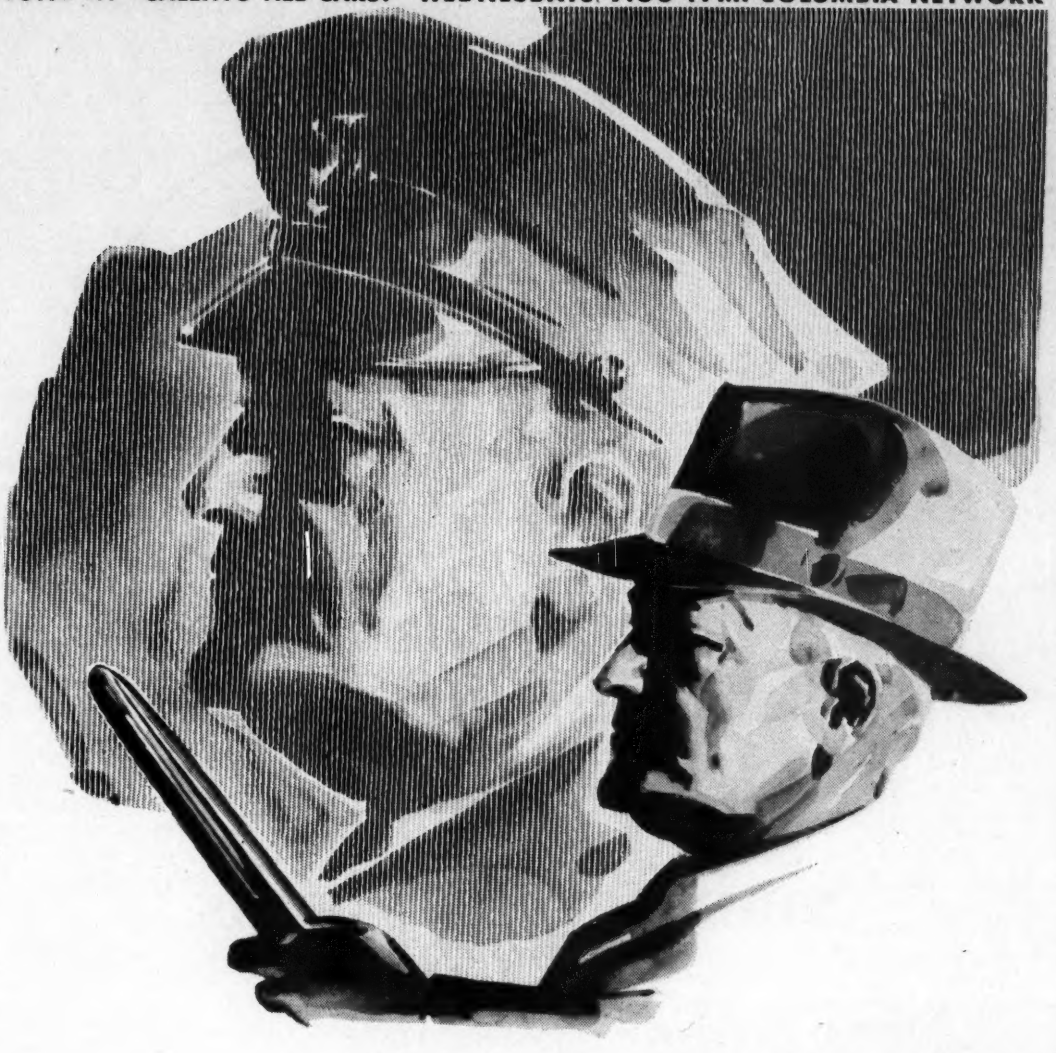

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and lever arrangements. During periods of high winds the eliminators could be closed and the spray loss materially reduced and yet the cooling capacity of the tower was not decreased. When the wind died down the eliminators could be reopened and the tower allowed to function normally. However, plant operators disliked the constant attention which such devices required, and unless they were operated frequently corrosion and drift made them almost impossible to open or close easily. An adjustable central deck was also tried inside of the tower, but it had many of the same disadvantages as the other eliminators.

The "Aerator"

Rising costs of water and general dissatisfaction finally led to the development of a vertical baffled louver commercially known as an Aerator, patented. The preliminary work in this development was based upon the known characteristics of the vertically battened drift eliminator. Baffles composed of groups of staggered parallel battens were tried. Later a batten was placed normal to the surface of the group battens. The final solution of the problem resulted in the use of three rows of parallel battens having a key batten placed normal to the plane of the center row. Water loss tests were made with all of the above mentioned arrangements, and the present form of baffle was selected over the other types as a result of a balance between the relative costs of production and the corresponding water losses.

Aerators were first installed on a louver tower at Brea, California. During periods of high wind velocities the owners of this tower had been unable to keep the tower basin full of water, and the ground on the leeward side of the tower changed into a sea of mud. Such an installation on one-half of the leeward side of the tower enabled the plant to be kept in operation and completely dried up a proportional share of the mud.

The first of these towers was built with the sides pyramided. Only a very small opening was left between the bottom of one baffle and the top of the baffle immediately below it. It was found that with such an arrangement insufficient air flowed through the tower, and it was necessary to furnish a larger Aerator tower than louver tower to dissipate the same heat load.

To counteract this difficulty the baffles were moved away from the tower columns to a point at which the volume of air flowing through the opening on the top of the Aerator unit and between the battens was equal to the amount of air flowing between the louvers of a

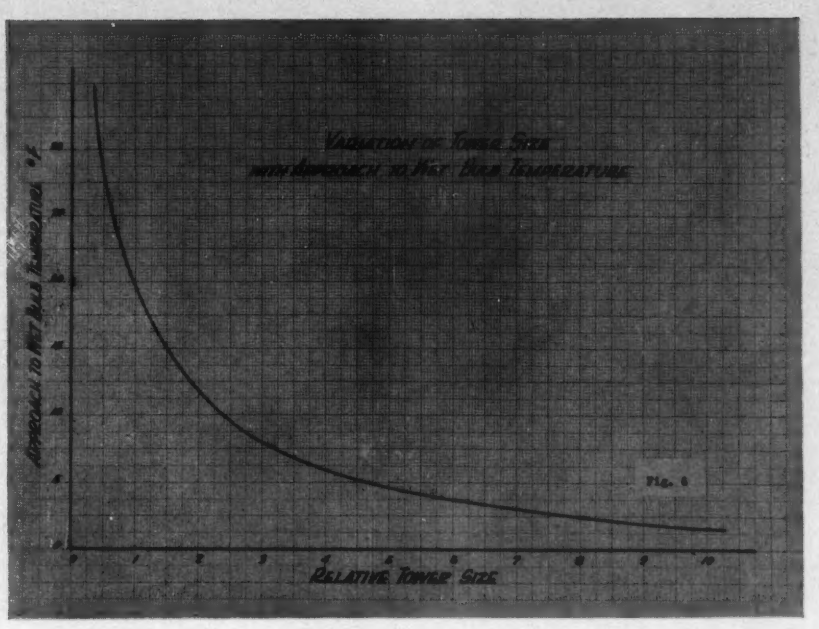


Fig. 6

tower of the same effective height and width, as is shown on Fig. 2. This change resulted in the towers equipped with such baffles performing as well as any of the existing louver towers.

Quantitative drift loss tests were then run on Aerator towers. The theoretical amount of water required for evaporation was calculated, and may generally be considered about 0.9% of the tower circulation for a 10° temperature drop. This evaporation takes ino account the latent heat of vaporization only, and this figure must be reduced because of the sensible heat lost to the surrounding air by conduction, convection and radiation. Thus evaporation to the approximate amount of 0.65% of the tower circulation for a 10° temperature drop has been experimentally determined. By knowing the amount of water required for makeup alone, and by metering the quantity of makeup water required under varying wind conditions, a curve showing the relation between the amount of water lost as wind-blown spray and the wind velocity was obtained. Figure 3 shows this relation for both louver and baffled louver towers.

Drift losses in themselves may be considered to be rather inconsequential except when plant operation is impeded and the surrounding plant is wet. But the cost of even a small drift loss is often enough to exceed the original tower price during a period of 18 months

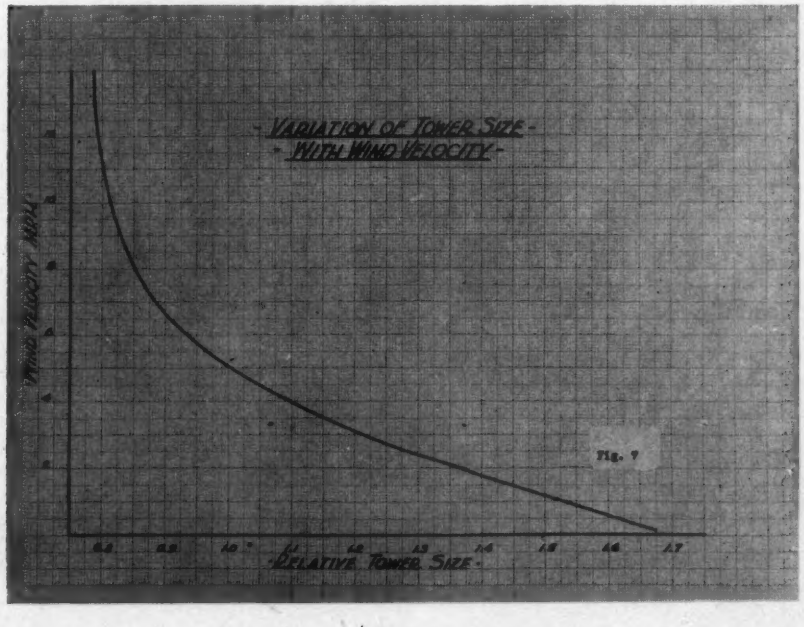
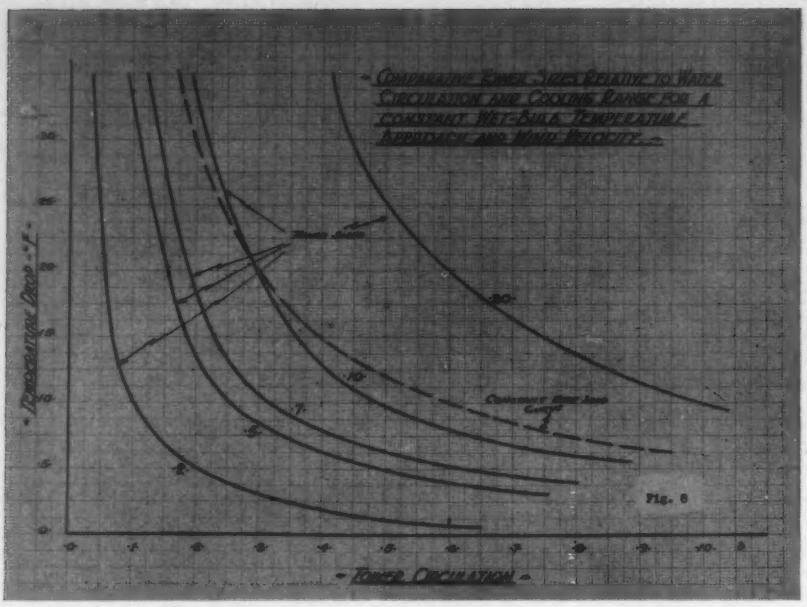


Fig. 7


- Comparative Tower Sizes Relative to Water Circulation and Cooling Range for a Constant Wet-Bulb Temperature Approach and Wind Velocity -
- Temperature Drop °F -
- Tower Circulation -
Fig. 8

to two years. Figure 4 shows the relative costs of a water loss of one percent of the total tower circulation for various water rates and circulations. The use of a satisfactory type of baffle will assume a positive saving in this respect.

To meet the various demands of industry several basic widths of towers furnished in sections approximately six feet in length and varying in height from four to 18 cooling decks are required. Towers having a deck width of about 12 feet are furnished with a wide base designed to accommodate cooling sections up to 20 feet in length placed at right angles to the tower axis. Coils, if installed in the smaller models, are placed longitudinally.

Tower Framework

Tower framework is fabricated from select California redwood or cypress. The component members are bolted together and amply braced. Brass bolts are generally used because of their resistance to corrosion. Galvanized bolts are also used but, since the inside of the nut cannot be galvanized, they corrode easily and the life of the bolt is materially lowered. Copper or galvanized nails are used in deck and baffle fabrication, but galvanized nails are recommended because of their superior holding power, a property in which even barbed copper nails are deficient.

As a rule, all submerged castings are made of cast iron. Smaller intermittently exposed castings are made of brass or bronze since, if made of cast iron, corrosion would lower their strength by lowering their cross-section.

Basins for cooling towers are made either of wood, steel or reinforced concrete, depending upon the requirements of the purchaser. Reinforced concrete is generally used on permanently located towers. If an unguyed tower is used the weight of the basin is increased.

One method of selecting a tower is to consider the length of the tower as

$$L = \frac{Q \times D \times W}{C}$$

in which "Q" is the quantity of tower water being circulated, "D" is a design factor dependent upon the tower height and width, and "W" is a wind correction factor, and "C" is a factor representing the allowable concentration of tower water per unit of deck area. This factor is determined from a curve similar to Fig. 5 by means of which the temperature drop, approach to the wet-bulb temperature and wet-bulb temperature are taken into consideration.

The size of a tower required to handle a given heat load varies greatly with the performance required, and care should be used in specifying the wet-bulb temperature, the final approach of the tower water to the wet-bulb temperature, the wind velocity and the quantity and temperature range of the tower water being circulated.

If plant operation requires the maintenance of a definite minimum temperature it is essential that the highest prevailing wet-bulb temperature, usually occurring during July, August and the early part of September, be used in rating the tower. Then, when the wet-bulb temperature drops and colder tower water is obtained, the quantity of tower water being circulated may be decreased.

The approach of the final tower water to the wet-bulb temperature should be made as large as possible to avoid unnecessaryily increasing the tower size. Figure 6 illustrates the above point by showing the relation between tower size and approach to the wet-bulb temperature while circulating a constant quantity of water through a given temperature range. In specifying the operating conditions an approach of not less than five degrees and preferably 10 degrees or greater is recommended.

The relative size of a tower varies with the wind velocity as shown in Fig. 7. In order to obtain the required minimum temperature during the summer months care should be taken to specify a wind velocity which is representative of the poorest conditions experienced during the warmer months rather than a figure which represents the average wind velocity over a period of years.

Selection of the proper circulation and temperature range of the tower water is often more or less definitely determined by process requirements. Since tower prices are proportional to their respective sizes the smallest tower capable of handling the heat load is the most economical one to use.

A calculation for a constant thermal load of 10,000,000 Btu's per hour follows. Operating conditions make it undesirable for more than a 25 degree or less than a 10 degree temperature drop.

The following selections could be made:

$$GPM = \frac{\text{Heat Load (Btu's/hr)}}{\text{Temperature Drop (°F)} \times 8.33 \times 60}$$

(1) $\frac{10{,}000{,}000}{10 \times 8.33 \times 60} = 800$ Gpm

(2) $\frac{10{,}000{,}000}{25 \times 8.33 \times 60} = 1000$ Gpm

(3) $\frac{10{,}000{,}000}{20 \times 8.33 \times 60} = 1333$ Gpm

(4) $\frac{10{,}000{,}000}{15 \times 8.33 \times 60} = 2000$ Gpm

The following lengths of tower, 12 feet wide and 35 feet high, would be required to handle these quantities, the approach to the wet-bulb temperatures and the wind velocity being constant:

(1) 55.0 Feet
(2) 60.5 Feet
(3) 68.5 Feet
(4) 77.0 Feet

Figure 8 further illustrates the relation between capacity, range and tower size. In general, because of the larger cooling potential, it may be concluded that for the same heat load less tower is required for cooling a small quantity of water through a large temperature range than is required for cooling a large quantity of water through a small temperature range.

MacClatchie Appoints Rockies Representative

Because of the increased demand for MacClatchie products in Wyoming, Montana and Canada, E. C. Dilgarde, connected in 1922 with the Loop Steel Manufacturing Co. as Rocky Mountain district representative has been added to the staff of the MacClatchie Manufacturing Co. to handle the growing trade in the northern district. An old timer in the oil business, Mr. Dilgarde has had a wide variety of experience in many phases of the industry, including drilling, rotary operations, and production, as well as in the sales department. Headquarters for the new MacClatchie representative will be located in Casper, Wyoming.

Martin-Decker Corp. Holds Company Party

Combining a farewell salute to "Frosty" Martin, and a welcome home to "Deck", the Martin-Decker Corp. recently held a company party at the Lakeside Country Club, near Long Beach. Mr. Martin, who is leaving soon for an extensive trip around the world to visit various oil fields, was presented with a handsome military brush set by the employees. He plans to be gone about a year.

Following the dinner, Mr. Decker entertained the group with an account of his recent sales trip by plane to the oil fields of Venezuela, Colombia and Trinidad. He illustrated his talk with several reels of film, some of which he took from the plane, showing interesting scenes in Central and South America. Highlights included closeups of drilling operations in Lake Maracaibo, Venezuela. In addition, the Pan-American Airways film, "Flying the Lindberg Trail," was shown.

Houston Hotel Rates Not Raised For Show

All hotels in Houston, Texas, have agreed to maintain standard prices charged throughout the year during the Oil-World Exposition, which is to be held there from Oct. 11-16, inclusive. Leading hotels such as the Rice, Texas State, Lamar, San Jacinto, Ben Milam, Wm. Penn, Sam Houston and others are practically sold out, but any reservations made will be at regular rates.

The Houston Chamber of Commerce has appointed a Housing Committee which has listed all the smaller hotels with their rates, facilities and standing. This committee has also listed several hundred rooms in private residences where visitors may also obtain accommodations.

Single rooms in Houston hotels may be obtained from $2.50 per day up; double room from $4.00 per day up. Reservations can be made through the Oil-World Exposition, Inc., Petroleum Building, Houston, Texas.

Kemnitzer Gets Naval Commission

William J. Kemnitzer, petroleum technologist, has been commissioned a Lieutenant Commander in the U. S. Naval Reserve. Recently, Mr. Kemnitzer has appeared as expert witness for the Federal Government in litigation involving naval petroleum lands in the Elk Hills, California.

Kelting New Smith Representative

The E. M. Smith Co., manufacturers of the Grizzly line of industrial products, announces the appointment of Paul Kelting as its factory representative with headquarters at the company's newly opened warehouse at 2311 West Street, Houston, Texas.

The new factory branch of E. M. Smith Co. will maintain a Grizzly rotary brake block band exchange, under which Grizzly brake blocks installed on new steel bands that are exact duplicates of those used on the draw works by the manufacturer, are exchanged for the old, worn and warped bands which are junked.

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NEW MEXICO LEASEHOLDERS: For reliable information on New Mexico developments take my weekly scout report. W. S. Patterson, Santa Fe, N. M.

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Owner of Section 21, Township 5 North, Range 6 West, known as Victor Valley, San Bernardino Co., (which is leased to Quartermasters Oil Company who is at present preparing to drill for oil on the sw¼ of 21) will sell 40 acres, thoroughly geologized on the ne¼ of se¼ at 60.00 per acre. NO MORE WILL BE SOLD. J. H. Zitt, Drawer 1455, San Diego, Calif. 7-5-d

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MAPS
Large map of Los Angeles Basin oil fields and map showing all California oil fields. Price $15.00 each on paper and $20 each on cloth. Individual state oil and gas maps of Mid-Continent and Rocky Mountain regions. Maps show geological cross sections at base. These maps indicate wells drilling, wells producing and abandoned, with depths.
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1127 Story Bldg.
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Phone: TUcker 7530

Ratigan On Trip To Europe

James P. Ratigan of Los Angeles, head of the organization manufacturing the Ratigan line of oil field products, left Los Angeles recently for a trip to England, Ireland and Scotland, where he will combine business and pleasure for several months. He planned to sail from New York on the S. S. Manhattan. During his sojourn in Ireland, the land of his birth, Mr. Ratigan will visit his brothers, sisters, and a number of old college friends. Returning, he will sail from Queenstown Harbor, Ireland on Sept. 22, arriving in this country in time to attend the Oil-World Exposition to be held at Houston, Texas, in October.

Coast Exploration Coring Wildcat Near Modesto

Coast Exploration Co. K-2 No. 1, wildcat test for gas in the Modesto area in sec. 30, 4s-9e, Stanislaus county, is being cored ahead below 5850 ft. Formation tests made to date have shown only salt water.